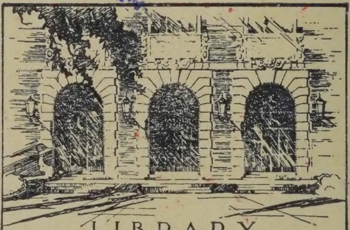

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NEW ESSAYS

CONCERNING

HUMAN UNDERSTANDING

· The MM Co ·

NEW ESSAYS

CONCERNING

HUMAN UNDERSTANDING

BY

GOTTFRIED WILHELM LEIBNITZ

TOGETHER WITH

AN APPENDIX

CONSISTING OF SOME OF HIS SHORTER PIECES

TRANSLATED FROM THE ORIGINAL LATIN, FRENCH
AND GERMAN, WITH NOTES

BY

ALFRED GIDEON LANGLEY
A.M. (BROWN)

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To my Mother and Sister

SOMETIME GONE WHERE WE SHALL KNOW AS WE ARE KNOWN

And to my Father

STILL WHERE WE SEE AS IN A MIRROR OBSCURELY

IN DEEPEST LOVE AND GRATITUDE

I DEDICATE THIS BOOK

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TRANSLATOR'S PREFACE

The work herewith given to the public consists of a translation of the entire fifth volume of Gerhardt's *Die philosophischen Schriften von G. W. Leibniz*, sub-entitled "Leibniz und Locke," consisting of an Introduction by Gerhardt, several short pieces on Locke's *Essay* and the *New Essays on Human Understanding;* and of an Appendix containing a translation of other short pieces of Leibniz bearing on the subjects discussed in the *New Essays* or referred to therein. The Introduction on The Philosophy of Leibniz by the translator suggested and urged by Professors Palmer and Royce of Harvard University, and for some time contemplated, is deferred, and reserved, if at all, for another time and occasion, owing to the size of the present volume, as well as for other good and sufficient reasons which it is not necessary here to mention.

The translation of Leibniz's *Nouveaux Essais sur l'Entendement Humain* was first suggested by the following sentence of the late Professor George S. Morris, of the University of Michigan, in a note to his *Philosophy and Christianity*, page 292: "It suggests no favorable comment on the philosophic interest of the countrymen of Locke that the above-mentioned reply of Leibniz to Locke has never (so far as I can ascertain) been translated into English." Four instalments, consisting of Book I. and Book II., chapters 1–11 inclusive, were published in as many numbers of the "Journal of Speculative Philosophy."[1] Professor Morris very kindly sent me a careful criticism of about one-third of the first instalment, with valuable suggestions regarding the further work of translation. His corrections and suggestions received careful consideration and were embodied in subsequent revisions of the translation in preparing it for the present issue.

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[1] Vol. 19, No. 3, July, 1885; Vol. 21, No. 3, July, 1887; Vol. 21, No. 4, October, 1887; Vol. 22, No. 2, April, 1888.

The portion of the *New Essays* thus published being favorably received by professors and students of philosophy in this country and in Europe, and being encouraged to go on and translate the entire piece, the work begun in 1885 was continued in leisure hours until in June, 1891, the translation was completed. Revision, annotation, and the labor of getting it through the press have occupied the greater part of my free time since then. The annotation, which was not a part of the original plan, but which was found to be desirable, if not even necessary, as the sheets began to appear in type, has been the chief cause of the delay in the appearance of the book, the labor involved therein proving far greater and unavoidably more protracted than was expected, the annotation also, as is frequent in such cases, growing with the progress of the book.

The text-basis of the translation is that of C. I. Gerhardt in his *Die philosophischen Schriften von G. W. Leibniz*, 7 vols. Berlin, 1875–1890, except for the Dynamical Pieces in the Appendix, Nos. IV., V., the text-basis of which is C. I. Gerhardt's *Leibnizens mathematische Schriften*, Berlin and Halle 1849–1863, and Appendix No. VII., for which both these editions are used; for Appendix No. IX., the text is tha given by Guhrauer, *G. W. Freiherr v. Leibnitz. Eine Biographie* Breslau, 1846. The other editions used in the comparison o the text and the preparation of the notes are: J. E. Erdmann, *Leibnitii Opera Philosophica*, Berlin, 1839–1840; M. A Jacques, *Œuvres de Leibniz*, Paris, 1842; P. Janet, *Œuvre Philosophiques de Leibniz*, Paris, 1866; Dutens, *Leibnitii Oper Omnia*, Geneva, 1768; Foucher de Careil, *Lettres et Opuscule inédits de Leibniz*, Paris, 1854, *Nouvelles Lettres et Opuscule de Leibniz inédits*, Paris, 1857, and *Œuvres de Leibniz*, Paris 1859 *sq.*, 2d ed., Paris, 1867 *sq.* R. E. Raspe, *Œuvres Philosophiques de feu Mr. Leibnitz*, Amsterdam and Leipzig, 1765, wa received too late to be of service, but as his text is the origina printed text of the *New Essays*, and has been used by all subsequent editors, it is not probable that any important variatio of reading has been overlooked; and Raspe's text has no notes Besides these editions of Leibnitz's Works, the German trans lations of the *Théodicée* and of the smaller philosophically important works entitled *Die kleineren philosophisch wichtigeren Schriften* by J. H. von Kirchmann, in his *Philosophische Bibliothek*, Berlin, 1879, and the English translation of his important philosophical opuscules by Professor George M. Duncan of Yale University, entitled *The Philosophical Works of Leibnitz*, New Haven, 1890, have been consulted. From the last-named work, so as to include in one book all of Leibnitz's discussions of Locke, it was at first intended to reprint in the Appendix all the pieces bearing upon the subject discussed in the *New Essays*, or especially referred to therein. It finally seemed best to both Professor Duncan and myself to change the plan and translate new material, rather than duplicate that already translated, so that with the exception of Appendix No. VI., Professor Duncan's translation of which was either forgotten or unnoticed till after mine was in type, nothing appears in both books save such portions of the *New Essays* as he has included, and the piece entitled *On Locke's Essay on Human Understanding*, 1696. This statement will explain the references in certain notes, for example, page 101, note 1, page 154, note 1 (*cf. infra*, pages 737 and 749 respectively), to certain pieces of Leibnitz in the Appendix, which references are corrected in the Additions and Corrections by being changed to the proper pages of Professor Duncan's book.

Of great value in the revision of the translation, and of the greatest service in the preparation of the notes, has been the German translation of the *Nouveaux Essais*, with notes, by Professor Carl Schaarschmidt of the University of Bonn. His material has been freely used, either by direct translation and quotation, or in substance, in the notes of the present edition, though always, so far as possible, only after verification and further independent study. His notes, I regret to say, contain many numerical errors, occasioned presumably by insufficient care and accuracy in proof-reading; otherwise they are, for the most part, accurate. The fact that Professor Schaarschmidt's book was not received till after a portion of mine was in type accounts in part for the appearance of so much of his note-material in the Additions and Corrections, rather than in its proper place in the foot-notes to the text.

Professor A. C. Frazer's splendid edition of *Locke's Essay*, Oxford, 1894, did not appear until after most of the *New Essays* were in type; and P. Coste, *Essai philosophique concernant l'Entendement humain — par M. Locke*, Amsterdam, 1742, 1 vol., 4to, 1774, 4 vols., 12mo, could not be obtained until all the *New Essays* and most of the Appendix were in type. Both of these works, therefore, could be used only in the supplementary notes in the Additions and Corrections.

With regard to the text itself, particularly of the *New Essays*, a few words may not be out of place. The variations are slight and chiefly verbal, and scarcely ever essentially modify the thought. They are ultimately due either to the manuscript of Leibnitz — which Erdmann (Preface, p. xxii) says is "written in such small characters often, and so full of corrections, that it is very difficult to read it" ("tam parvis sæpe literis conscriptum et correctionibus adeo abundans ut perdifficile lectu") — or to certain changes made for the purpose of improving the literary style of the author, and of thus making his work more acceptable to his French readers. The chief difference between the text as given by Gerhardt, who has compared his impression "with the original, so far as it is still extant," and that of the other editors consists in a transposition of the text in Book I., chap. I., a transposition which is fully indicated in the note at the point in the text of the translation where it occurs, and which is, I suppose, due to Gerhardt's fidelity to Leibnitz's original text. All the important textual variations are listed in the notes.

Gerhardt's text, having been compared with the original, seems the most trustworthy, and accordingly has been followed in this translation, excepting in a few instances mentioned in the notes, where it is manifestly erroneous from inaccurate proof-reading or other cause, and where the text of some other editor seemed more consistent or correct. Gerhardt has introduced into his text the brackets, [ ], in which, "in the original, Leibnitz has enclosed the words of Philalethes, who states the views of Locke," "perhaps as an indication that they are not his own;" and I have introduced them into the translation precisely as they stand in the text of Gerhardt, in order that the translation may conform to and represent as perfectly as possible Leibnitz's original text in its integrity. There seems to be, however, little regularity or consistency in the employment of these brackets, so far, at least, as I can discover upon comparison with Locke's treatise.

Besides the editions and translations already named, the various separate editions of single works of Leibnitz, as also the various discussions of his philosophy, theology, etc., and the monographs on different parts of the same, were occasionally consulted or referred to, so far as these were accessible or could be procured. Among the monographs, especial mention should be made of Professor John Dewey's most excellent *Leibniz's New Essays concerning the Human Understanding. A Critical Exposition*, 1888, in the series of German Philosophical Classics edited by Professor George S. Morris, and published by S. C. Griggs & Co., Chicago; and of the earlier monograph of G. Hartenstein, *Locke's Lehre von der menschlichen Erkenntniss in Vergleichung mit Leibniz's Kritik derselben*, Leipzig, 1861.

The translation has purposely been made close rather than free, a philosophical treatise seeming properly to require a closer adherence on the part of the translator to the author's form of thought and expression than a history, novel, or poem. Whatever view may be taken on this point, — and I frankly admit that at least two views are possible and that each method of translation has its advantages and its disadvantages, its perils and its successes, — the form and style of the *New Essays* make an elegant and forceful translation well-nigh impossible. Such a translation would necessitate the entire re-writing of Leibnitz's work, would, in fact, be a reproduction rather than a translation, a task I have not attempted nor felt it incumbent on me to attempt. My aim has been simply to represent as faithfully and as accurately as possible, and in as good English as its form and expression admitted, Leibnitz's exact thought. The style of Leibnitz in the *New Essays*, especially in the abbreviations or abstracts of Locke's *Essay* put into the mouth of Philalethes, is often abrupt and obscure and sometimes even ungrammatical (*cf.*, for example, *New Essays*, Book III., chap. II., § 18, page 392, lines 6 and 7, and the note thereto, *infra*, page 768 *ad fin.*). This condition of things is due partly to the form of the work, but chiefly to the method of its composition (*cf.* Gerhardt's introduction, *infra*, page 8, and notes, and the letters of Leibnitz cited by Raspe in his Preface, page 12, note 6, and which he says, "I found with the manuscript of the *New Essays*," and "give as I found them"). A work so written, in spite of more or less revision, could not possibly be a finished treatise or a work of literary art like the Dialogues of Plato, and the character of the work must of necessity be reflected in the translation.

The notes aim to give the desirable or necessary biographical and bibliographical information regarding the persons and books referred to in the course of the work, so far as such information could be obtained; references to other pieces of Leibnitz, and occasionally to other authors, where the same topic is discussed; and explanations of a few terms thought to be obscure and the explanations of which are not generally known or easily accessible. The notes do not pretend to be a commentary on the text. Except in a few cases, the reader or student has purposely been left to gain his knowledge of Leibnitz's views from Leibnitz himself. Extended commentary was impossible within the necessary limits of the volume, and accordingly was not included in the plan. The philosophical notes, therefore, confine themselves to a brief statement of Leibnitz's views and to brief criticism or indication of criticism. The aim was to bring Leibnitz's great work within the reach of English students and to render it more easily accessible, with such annotation, literary and other, as would make it more acceptable to the student.

All material taken from other authors has, so far as possible, been verified and made the subject of such independent study as the case seemed to demand. All references to authorities have been verified when possible, and very great pains have been taken to secure perfect accuracy in all references. The citations have uniformly been taken and the references made to the best editions, and usually to the latest, when these editions were accessible. Occasionally other works or editions are referred to because of their accessibility or for other evident reasons. For the convenience of those possessing different editions of Leibnitz's works, as well as for those who may have access to only one of them, reference is usually made, especially in the earlier notes, to all of the editions Later this procedure seemed to encumber the notes with an unnecessary amount of numerical reference, and it was for the most part discontinued.

Attention is called to the Additions and Corrections as containing matter of importance, most of which was not obtained till after the portion of the book to which it refers was already in type, and which, therefore, could not be inserted in its proper place in the book, but had to be reserved to the end.

The Indexes are intentionally full and complete and have been made with great care by Rev. Robert Kerr Eccles, M.D. There is no adequate index to Leibnitz's works, and none whatever exclusively devoted to the *New Essays*. The references thereto in the meagre index in Raspe's edition of the Philosophical Works, not generally accessible, and in the general index, full as it is, in Erdmann's edition, are by no means sufficient. It is hoped that the Indexes here furnished may prove adequate for the works of Leibnitz included in this volume, and that thus a beginning at least of an adequate index to Leibnitz's complete works shall have been made.

In Appendix No. IV., *infra*, page 663, and No. V., *infra*, pages 674, 682, and 686, the numbering of the cuts is changed from that of the original text to conform to their proper numerical order in this book. The fact is here noted to prevent confusion in referring to the original.

I gratefully acknowledge my obligations and express my thanks to all who have aided me in my long and arduous work. Especially to President E. B. Andrews of Brown University, for aid in the note on the term "*quarto modo*," page 455, and for the verification of references; to Professor Albert G. Harkness of Brown University, for aid in locating some of the Latin quotations in the *New Essays;* to Professor J. F. Jameson of Brown University, for the note, page 757, explaining the term "Promoter," page 227; to Professor John M. Manly of Brown University, for information and aid in the notes to the *New Essays*, Book III., chap. 2, page 294, notes 2, 3, page 295, notes 2, 3; to Professor E. B. Delabarre of Brown University, for aid in the note to page 122, lines 1, 2, *infra*, pages 739–740; to Professor H. P. Manning of Brown University, for aid in the note on the "perles" of De Sluse, page 768; to Rev. R. H. Ferguson, for aid in the same note, and in the revision of a portion of the Appendix; to Mr. Frank E. Thompson, A.M., Head-master of the Rogers High School, Newport, R. I., for aid in connection with a part of the subject-matter of the Dynamical Pieces in the Appendix; to Professor Benjamin O. True of Rochester Theological Seminary, for information and verification of references in connection with the notes to the *New Essays*, Book IV., chap. 19, page 599, note 2, 601, note 1, 602, note 1; to Professor F. A. March of Lafayette University, for the location of the Latin poetical quotation on page 603; to Professor Carl Schaarschmidt of Bonn University, for consulting books inaccessible in this country, and for information kindly furnished by letter, and for his cordial interest in my work, as well as for the very valuable notes to his translation of the *New Essays*, without which mine never would have been written in their present form; to the various libraries whose resources have in one way or another been placed at my disposal, among which should be mentioned the Boston Public Library, the Boston Athenæum, the libraries of Andover Theological Seminary, Newton Theological Institution, Rochester Theological Seminary, Brown University, Harvard University, Yale University through Professor Duncan, the Library of the Surgeon General's Office, Washington, D.C., and the Redwood Library, Newport, R.I.; to the libraries particularly of Newton Theological Institution, Brown University, and Harvard University, for the long-continued loan of needed books; to Professor Charles R. Brown of Newton Theological Institution for information and the verification of references; to my friend and former pupil Mr. Alfred R. Wightman, of the Morgan Park Academy of the University of Chicago, for the verification of references and aid in the revision of a portion of the Appendix; to Mr. Thomas J. Kiernan of the Harvard University Library, for special favors in the consultation of the library, for the loan of books from the same, and for information cordially furnished by mail; to Benjamin Rand, Ph.D., of the Department of Philosophy at Harvard University, for frequent consultation of authorities, verification of references and information furnished; to my friend Mr. Richard Bliss, Librarian of the Redwood Library, without whose competent criticism and constant advice and aid, added to his comprehensive and accurate knowledge in many fields, and especially in bibliography, my notes would have been far less full and accurate than, I trust, they now are; and last but not least, to my wife for literary criticism in the revision of the translation and notes, and aid in the laborious task of proof-reading. Had I always accepted and adopted her criticism and that of Mr. Bliss, my work would doubtless rank higher as a piece of literature than is now possible.

My thanks are also due and most heartily tendered to my publishers, Messrs. Macmillan & Co., for their uniform courtesy and long-suffering patience in the repeated but unavoidable delays which have characterized the appearance of this book; and to J. S. Cushing & Co., of the Norwood Press, for the excellence of their work, and the pains they have taken to secure the greatest possible accuracy in the same, and for their uniform courtesy and long-suffering patience amid the vexatious delays unavoidably incident to the preparation of the notes and the correction of the proof.

In editing the work of a thinker and writer so comprehensive as Leibnitz, it is impossible to escape all errors of fact or judgment. I have done the best I could in the circumstances in which I have had to work, away from large libraries and from the advice and criticism of fellow-students in the same lines. Competent and truth-loving criticism, and the correction of any and all real errors will be thankfully received.

With one sentence from Leibnitz's letter to Coste, June 16, 1707, as significant of his character and illustrative of his spirit, more truth-loving than polemical, and as beautifully expressing the essence of true criticism, I close this Preface: "Mon but a esté plustost d'eclaircir les choses, que de refuter les sentimens d'autruy," which, being interpreted, is: "My purpose has been to throw light upon things rather than to refute the opinions of another."

ALFRED G. LANGLEY.

NEWPORT, R.I., April 11, 1896.

LEIBNITZ'S CRITIQUE OF LOCKE ON HUMAN UNDERSTANDING

GERHARDT'S INTRODUCTION TO HIS EDITION OF LEIBNITZ'S NOUVEAUX ESSAIS

[*From the German*]

In the first philosophical treatise, *Meditationes de Cognitione, Veritate, et Ideis,*[1] which Leibnitz published in the year 1684, he had firmly laid the foundations of human knowledge; he declared adequate and at the same time intuitive knowledge as the most complete. At the end he adds: Quod ad controversiam attinet, utrum omnia videamus in Deo . . . an vero proprias ideas habeamus, sciendum est, etsi omnia in Deo videremus, necesse tamen esse ut habeamus et ideas proprias, id est non quasi icunculas quasdam, sed affectiones sive modificationes mentis nostræ, respondentes ad id ipsum quod in Deo perciperemus: utique enim aliis atque aliis cogitationibus subeuntibus aliqua in mente nostra mutatio fit; rerum vero actu a nobis non cogitatarum Ideæ sunt in mente nostra, ut figura Herculis in rudi marmore. The assumption of these ideas slumbering in the mind, these innate ideas (*angebornen Ideen; idées innées*), Leibnitz regards as necessary in order to understand the nature of the mind. (Habet anima in se perceptiones et appetitus, iisque natura ejus continetur, he writes to Bierling, Hanoveræ 12. Augusti 1711.[2] Et ut in corpore intelligimus ἀντιτυπίαν, et figuram generatim, etsi nesciamus, quæ sint figuræ corporum insensibilium: ita in anima intelligimus perceptionem et appetitum, etsi non cognoscamus distincte insensibilia ingredientia perceptionum confusarum, quibus insensibilia corporum exprimuntur.) He could therefore only prove the necessary truths, *i.e.*

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[1] C. I. Gerhardt: *Die philosophischen Schriften von G. W. Leibniz.* Vol. 4, pp. 422–426. J. E. Erdmann: *G. G. Leibnitii Opera Philosophica*, pp. 78–81. Translated by George M. Duncan, *The Philosophical Works of Leibnitz*, pp. 27–32, New Haven: Tuttle, Morehouse, & Taylor, 1890. — Tr.

[2] The letter is found in Gerhardt's ed., Vol. 7, pp. 500–502. — Tr.

those which are known by demonstration, inasmuch as the senses indeed teach what happens, but not what necessarily happens. Such ideas innate to the mind are, according to Leibnitz, the conceptions of substance, identity, the true and the good.

The writing of the man who questioned and rejected these fundamental principles of the system of Leibnitz could not fail to lay claim to Leibnitz's entire attention. It was John Locke (born, 1632, at Wrington, near Bristol; died, 1704, at Oates, in the county of Essex, in the house of Sir Francis Masham, whose wife was a daughter of Cudworth), who in his celebrated work ("An Essay concerning Human Understanding"; in four books, London, 1690[1]) sought to discover also the origin, the certainty, and the extent of human knowledge, but who denied the existence of innate ideas and principles, and affirmed that the mind is originally like an unwritten tablet (*tabula rasa*). In the first book of the work named, Locke seeks to set forth the view that there are no innate ideas, and therefore no innate principles and truths; that the understanding is by nature like an unwritten sheet of paper. The second book contains the proof whence the understanding gets its ideas. Since there are no innate concepts and principles, the origin of all ideas can be only in experience. Experience, however, has a double sphere, that of external and of internal perception: the first Locke calls Sensation; the second, Reflection. Sensation is the perception of external objects mediated through the senses; reflection, the perception of the activities of the soul in relation to the ideas presented through the senses. Ideas are partly simple, partly complex. Simple ideas arise through the single senses, remoter ideas through more senses, as extension, form, motion, rest; through reflection alone, for example, the idea of thought and will; through union of sensation and reflection, the ideas of power, existence, unity. The complex ideas are of three kinds: modes, substances, relations. The modes, *i.e.* the complex concepts, which contain nothing existing for itself, are either pure (simple modes), as space, time, or mixed (mixed modes), as thought, motion, power. By substances Locke understands those combinations of simple ideas or groups of ideas, which are conceived upon the hypothesis that they correspond to definite, actually existing things, so that the substance (*substratum*) presupposed for and in them is considered as the point of union for the rest of the constituent parts contained in the group of ideas. Of substance, man has no clear conception; it is, according to Locke, worthless. According to him this conception is not limited to single things, but he extends it also to the collective ideas of many things; thus an army, a herd of sheep, is just as much a substance as a single man or one sheep. Relations arise from the comparison of many things with one another, as the conceptions of cause and effect, time — and place — relations, identity and diversity.

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[1] This work was already completed in the year 1687; an abstract made by Locke himself appeared in the following year, 1688, translated into French in Leclerc's "Bibliothèque universelle," T. VIII., pp. 49–142. The contents of the work, after it was completely published in the year 1690, was communicated in much detail by Leclerc in the "Biblioth. Univers.," T. XVII., p. 399 *sq*. The new editions, which already in the shortest time followed each other in quick succession in the years 1694, 1697, 1699, 1705, prove what a mighty impression Locke's work made upon cultivated circles. 1700 appeared Coste's French translation of Locke's work: it was enriched by Locke himself with improvements and additions. Leibnitz followed this French translation in the composition of his *Nouveaux Essais*.

Ideas and their combinations are apprehended in language; therefore Locke begins in the third book with an investigation upon language, in so far as our knowledge, although relating to things, is bound to words, and words are an indispensable middle-term between thoughts and things. The extent and the certainty of knowledge are on this account conditioned upon the constitution and significance of words. In the fourth book Locke pronounces the concluding judgment upon the extent and the different grades of certainty in human knowledge.[1]

Leibnitz's attention was already turned from his own work to that of the English philosopher by the above-mentioned edition published by Locke himself in the "Bibliothèque universelle." When later Locke's work reached his hands, he threw off, as was his custom while he skimmed through the book, some remarks;[2] they follow here under the superscription: "Sur l'Essay de l'entendement humain de Monsieur Lock."[1] Leibnitz sent it in accord with his pleasant custom to Thomas Burnett, with whom he corresponded.[2] Through him they came to the knowledge of Locke, who, however, upon vain pretexts, declined every reply thereto.[3] When Leibnitz received among others the communication from Burnett (July 26, 1698), that Locke had so far expressed his opinion that he for his part did not sufficiently understand Leibnitz's remarks upon his book, he resolved upon a remodelling of the same. Two fragments of the year 1698 are thereupon at hand; they are printed here for the first time, under the superscription: "Echantillon[4] de Reflexions sur le I. Livre de l'Essay de l'Entendement de l'homme. — Echantillon de Reflexions sur le II. Livre." Leibnitz again sent them to Burnett; through whom Locke received them; but this attempt also on Leibnitz's side remained without result, as appears from Burnett's letter to Leibnitz October 23, 1700.

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[1] For the foregoing are of value: Hartenstein, *Locke's Lehre von der menschlichen Erkenntniss in Vergleichung mit Leibniz's Kritik derselben.* Leipzig, 1861. — Ueberweg, *Grundriss der Geschichte der Philosophie*, 3 Theil. Berlin, 1880.

[2] They came into being after the year 1693, since mention is made in them of Locke's Tract upon Education: *Thoughts on Education*, London, 1693. They were first printed in *Some Familiar Letters between Mr. Locke and Several of his Friends*, London, 1708, pp. 196–205.

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[1] On Locke's Essay on Human Understanding. See *infra*, pp. 13–19. — Tr.

[2] Leibnitz to Thomas Burnett, 7th–17th March, 1696: "I found, also, finally, a rough draught which I had had copied formerly, of some remarks I made when running through the excellent essay of Locke upon Human Understanding; I take the liberty of sending you a copy." — Leibnitz to Th. Burnett, 17th–27th July, 1697: "What I sent you of my reflections upon the important book of Locke is entirely at your disposal, and you can communicate it to whomever it seems good to you; and if it falls into his hands, or those of his friends, so much the better; for that will give him an opportunity to instruct us and to clear up the matter."

[3] Highly characteristic is that which Burnett communicated to Leibnitz upon the 23d of July, 1697: "I must tell you a joke of Locke's the other day, on this matter. We began to speak of the controversies of savants with those of this country. He said: 'It seems to me we live very peaceably as good neighbors of the gentlemen in Germany, for they do not know our books, and we do not read theirs, so that the tale (*la* [? *le* — Tr.] *conte*) (? *le compte*, the account) was well adjusted on each side.'" — On the other hand, we find a very dissenting judgment of Locke's upon Leibnitz and his remarks in his letter to Dr. Molyneux, of April 10, 1697: "I must confess to you that Mr. L——'s great name had raised in me an expectation which the sight of his paper did not answer, nor that discourse of his in the 'Acta Eruditorum,' which he quotes, and I have since read, and had just the same thoughts of it, when I read it, as I find you have. From whence I only draw this inference, That even great parts will not master any subject without great thinking, and even the largest minds have but narrow swallows." — Not less disparaging is Locke's judgment upon Leibnitz in the next letter to Molyneux, of May 3, 1697. — The correspondence between Locke and Molyneux is contained in the already quoted book: *Some Familiar Letters between Mr. Locke*, etc.

[4] Specimen of Reflections on Book I. of the *Essay on Human Understanding*. Specimen of Reflections on Book II. See *infra*, pp. 20–25. — Tr.

In the year 1700 appeared the French translation of Locke's work published by Pierre Coste;[1] it was prepared according to the fourth edition and contained accordingly the additions which Locke had made to the previous editions of his book. Leibnitz at once took occasion thereof to write a sketch for the "Monatliche Auszug[2] aus allerhand neu-herausgegebenen, nützlichen und artigen Büchern," for the year 1700 (September, pp. 611–636). This follows here under No. III.[3] together with the supplement of the following year, 1701.[4] In this sketch Leibnitz discusses two of the weightiest of Locke's additions, filling two separate chapters, viz.: chapter 33 of the second book, wherein Locke treats of the Association of Ideas, and then chapter 19 of the fourth book, in which he discourses of Enthusiasm.

Through the French translation Leibnitz first gained real access to Locke's work.[5] He recognized the importance of its contents in its fullest extent; at the same time the extremely large circulation and the universal recognition, which expressed itself through the editions following each other in rapid succession, must have made upon him a deep impression. Evidently for these reasons Leibnitz conceived the plan of answering Locke's work with a more extensive writing. It grew out of the often hastily-thrown-off remarks which he occasionally put on paper in the years following that of 1700, in which he was not permitted to undertake any continuous work.[1] In order to obliterate the traces of this method of work, Leibnitz considered it advisable, before he published it, to submit his book, as to composition and style, to the judgment of a native Frenchman. This revision was protracted until the year 1705, as appears from a writing which has no signature.[2] Another delay occurred by reason of the fact that Leibnitz in the following year, 1706, entered into correspondence with Pierre Coste, the translator of Locke's work; Coste told him (April 20, 1707) that the translation of Locke itself would be examined and furnished with important improvements; he would urgently advise him (Leibnitz) to put off the publication of his work until he obtained a knowledge of these changes of Locke. This further consideration, that he learned of the dissenting opinions of Locke in his correspondence with Molyneux, as also Locke's death, which had already followed in the year 1704, altered Leibnitz's original plan.[1]

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[1] Essai Philosophique concernant l'entendement humain, où l'on montre, quelle est l'entendue de nos Connoissances certaines et la maniere dont nous y parvenons, traduit de l'Anglais de Mr. Locke par Mr. Pierre Coste, sur la quatrieme edition, revue, corrigée et augmentée par l'Auteur. A Amsterd., 1700. 4. This first edition of Coste's translation was not accessible to me: I have been able to make use of the second: Essai Philosophique concernant, etc. Traduit de l'Anglois par M. Coste. Seconde edition, revue, corrigée, et augmentée de quelques Additions importantes de l'Auteur qui n'ont paru qu'après sa mort, et de quelques Remarques du Traducteur. A Amsterd., 1729. 4.

[2] *I.e.* "'Monatliche Auszug' (Monthly Abstract) of the various newly published, profitable, and pleasing books." — Tr.

[3] See *infra*, pp. 26–38. — Tr.

[4] This "Monatliche Auszug" appeared in three annual sets from 1700–1702. Guhrauer (*Leibnitz's deutsche Schriften*, 2ter Band) has tried to prove in a very complete excursus that Leibnitz was the real editor of this Journal. Certainly the sketch of Locke's work originated with him.

[5] Leibnitz to Thomas Burnett, 17th–27th July, 1696: "I could wish I had the same knowledge of the English language" (as of the French); "but, not having had the occasion for it, all I can do is to understand passably the books written in this language. And at the age at which I have arrived, I doubt if I could ever make myself better acquainted with it."—Leibnitz to Coste, of June 16, 1701: "I have followed your French version, because I thought it proper to write my remarks in French, since nowadays this kind of investigation is but little in fashion in the Latin Quarter."

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[1] "I have made these remarks in the leisure hours when I was travelling or at Herrenhausen, where I could not apply myself to researches which required more care" (*besoin*[1] in sense of *soin?* — Tr.).[1]

[2] "The frequent diversions to which I have been exposed have prevented me from pushing forward my remarks. Besides, I have been obliged to divide my time between the reading of your work and the commissions with which I have been entrusted by the Count de Schwerin, of which I must give account to him. You will find few remarks upon this paper; but I have taken the liberty of changing in the work itself a very large number of places in reference to which I did not at all hesitate when I saw that I could do this without disarranging the rest of the writing. I have not touched what is properly called the style; but the confidence with which you have honored me obliges me to say to you here that it greatly needs amendment, and that you seem too much to have neglected it. You know, sir, to what excess our French people have carried their well- or ill-founded delicacy. Too long periods are distasteful; an And (Et) or some other word too often repeated in the same period offends them; unusual constructions embarrass them; a trifle, so to speak, shocks them. It is proper, however, to accommodate yourself to their taste if you wish to write in their language; and, in case you should decide to print your work, I believe you will do well to retouch it with a little more severity. I am certain that you will not be displeased at the freedom with which I speak to you, since it comes from a person devoted to your service." — Feb. 2, 1705.

[1] W. T. Harris, editor of the "Journal of Speculative Philosophy," suggests that perhaps the reading was *besogne* (work) — instead of *besoin*. So that the passage read, "researches which required more work (or labor)." — Tr.

In order to obtain an easier entrance for his own ideas, and at the same time to make his reader familiar with those of Locke, Leibnitz had composed his work in the form of a dialogue. Two friends, Philalethes and Theophilus, converse together; the first states the views of Locke, the second joins thereto his own (Leibnitz's) remarks. This form of composition Leibnitz thought of abandoning. He writes to Thomas Burnett, May 26, 1706: "The death of Locke has taken away my desire to publish my remarks upon his works. I prefer now to publish my thoughts independently of those of another." On the other hand, he remarks, wellnigh it seems in the opposite sense, to the same, three years later, May 12, 1709: "My remarks upon the excellent work of Locke are almost finished; although we are not of the same opinion, I do not cease to value it and to find it valuable."

Leibnitz's work remained, in form at least, unfinished; a magnificent torso, and unpublished.[2] He turned to the composition of the "Theodicy." For the first time, fifty years after his death, it was sent to the press in "Œuvres Philosophiques latines et françoises de feu Mr. de Leibnitz. Tirées de ses manuscrits qui se conservent dans la bibliothèque Royale à Hanovre, et publiées par Mr. Rud. Eric. Raspe. Avec une Préface de Mr. Kaestner, Professeur en Mathématiques à Göttingen. A Amsterdam et à Leipzig, 1765." The present impression has been newly compared with the original, so far as it is still extant.[1] The corrections in reference to the style proposed by the native Frenchman are not taken into consideration, in order not to obliterate Leibnitz's style of expression; they relate, indeed, only to the first books.

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[1] Leibnitz to Coste, June 16, 1707: "The great merit of Mr. Locke, and the general esteem which his work has with so much justice gained, united to some intercourse by letters which I have had the pleasure of having with my Lady Masham, caused me to employ some weeks in remarks upon this important work, in the hope of conferring upon them with Mr. Locke himself. But his death shocked me, and caused my reflections to be behindhand, although they are finished. My purpose has been to throw light upon things rather than to refute the opinions of another. I shall be delighted, however, sir, to receive the additions and corrections of this excellent man, in order to profit from them."—Leibnitz to Remond, March 14, 1714: "He (Hugony) has also seen my somewhat extended reflections upon Locke's work, which treats of Human Understanding. But I dislike to publish refutations of dead authors, although they might appear during their lifetime and be communicated to the authors themselves. Some minor remarks escaped me, I know not how, and were carried to England by a relative of the late Mr. Burnett, bishop of Salisbury. Locke having seen them, spoke of them slightingly in a letter to Molyneux, which may be found among some posthumous letters of Locke. I learned his opinion of them only from this impression. I am not astonished at it: we differed a little too much in principles, and the views I advanced seemed to him paradoxical. However, a friend more biassed in my favor and less so in favor of Locke informs me that those of my reflections there inserted appear to him the best of the collection. I do not adopt this view, not having examined the collection."

[2] Over the Preface, which certainly was composed after the completion of the entire work, Leibnitz has written as the title of the work: *Nouveaux Essais sur l'entendement par l'Auteur du systeme de l'Harmonie preestablie.* In the Preface itself he leaves out the word "humain." The superscription of the

In the preface to his work, in which Leibnitz has put together the points of difference between his system and that of Locke, he remarks in the first place that Locke's Essay upon Human Understanding is one of the most beautiful and valuable works of its time; that he has determined to make some remarks upon it, because he himself has considered the same subject for a long time, and deemed it a good opportunity to create a favorable entrance for his own ideas in this way. His own system differs, in truth, from Locke's considerably, in so far as Locke's is more closely related to Aristotle, his own, on the other hand, to Plato; Locke's is more universally comprehensible, his own more abstract. Meanwhile, by clothing his own remarks in the form of a dialogue between two persons, one of whom presents Locke's views, the other joins thereto his own, he hopes to avoid the dryness belonging to abstract remarks; at the same time the reader is spared the labor of comparing the passages from Locke's essay under discussion. — The first important point of difference, wherein Leibnitz distinguishes himself from Locke, is in the question whether the soul is in itself empty like a *tabula rasa*, as Aristotle had already maintained, and that it receives everything through sense-perceptions and experience, or whether

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fourth book runs thus: *Nouveaux Essays sur l'entendement;* in the case of the three first books we find the superscription: *Nouveaux Essais sur l'entendement humaine.*

[1] In the original, Leibnitz has enclosed the words of Philalethes, who states the views of Locke, in [ ], perhaps as an indication that they are not his own. Raspe has omitted them. — GERHARDT'S NOTE. In this translation Gerhardt's use of [ ] has been strictly followed. — TR.

the soul originally has the principles of many conceptions and doctrines, as Leibnitz with Plato thinks. Hence arises another question, whether all truths depend upon experience, or whether there is still another principle. The senses are necessary for our actual knowledge, but they give us only examples, *i.e.* individual truths, which are not adequate for grounding the universal necessity of a truth. The necessary truths, which are found in pure mathematics, appear to rest upon other principles, whose proof depends not upon experience and the testimony of the senses, — a point to be well considered. Logic, metaphysics, ethics, are full of such truths, which can arise only from such principles as are called innate. It is nevertheless possible, continues Leibnitz, that my opponent is not wholly remote from my view. For after he has rejected innate ideas in the first book of his essay, he begins the second book with the statement that the ideas which have not their origin in sensation arise through reflection. What, however, is reflection but a regard for what is in us and born in us? Such are the ideas of being, unity, substance, etc. If, thinks Leibnitz, an understanding with his opponent might easily, perhaps, be re-established in reference to the above, yet it might create more difficulty in reference to the affirmation that the soul does not always think, just as bodies do not always have motion. To this Leibnitz opposes the statement that bodies are always in motion and that a substance cannot exist without activity; there are in the soul a multitude of impressions too small to be separately distinguished, but which, however, united produce an activity, although simply inarticulate, like the noise of the waves. These little perceptions are of greater significance than we think. By means of these insensible perceptions the pre-established harmony between the soul and the body is explained. In the same manner they are of great importance for Physics, for thereupon rests the law of continuity. These minute insensible perceptions are also the reason why there are not two perfectly similar souls or things of the same kind.

Another point of difference between Leibnitz and Locke is in reference to the conception of the nature of Matter. Locke considered the smallest particles of matter to be rigid bodies, and therefore assumed that space is empty, else were any motion impossible. Leibnitz, on the other hand, supposes space to be filled with a fluid matter which is divisible to infinity; he calls especial attention to the fact that Locke, who at first professed the gravitation theory of Newton constantly contested by Leibnitz, viz.: that bodies work upon each other from any distance whatever without touching, at a later period freed himself from this assumption of Newton.

In discussing the concepts of space, time, and number, Locke had remarked that only with these concepts may that of infinity be united. Leibnitz agrees with him in this, that there is neither an infinite space, nor an infinite time, nor an infinite number, that in general the infinite is not given in that which is put together out of parts. But the true infinite, Leibnitz adds, is in the Absolute, which is without parts. From this proceeds the concept of the finite through limitation.

In the beginning of the third book Locke had undertaken a discussion of language as the expression of the forms of knowledge. He had made thereby a distinction between nominal and real being. Leibnitz rejects this distinction as a perplexing innovation. Things, Leibnitz affirms, have only one essence, but different definitions of them, nominal and real definitions, are possible.

The contents of the fourth book, in which is treated the knowledge of the truth, gives Leibnitz no occasion to raise an important point of controversy. In reference to the axioms, whose indispensableness to scientific investigations Leibnitz affirms, Locke contests, the former enters into a more protracted explanation. In like manner he turns against Locke's notion that the use of Logic is rather unfruitful.

I

ON LOCKE'S ESSAY ON HUMAN UNDERSTANDING,[1] 1696

[*From the French*]

I FIND so many marks of unusual penetration in what Mr. Locke has given us on the Human Understanding and on Education, and I consider the matter so important, that I have thought I should not employ the time to no purpose which I should give to such profitable reading; so much the more as I have myself meditated deeply upon the subject of the foundations of our knowledge. This is my reason for putting upon this sheet some of the reflections which have occurred to me while reading his Essay on the Understanding.

Of all researches, there is none of greater importance, since it is the key to all others. The first book considers chiefly the principles said to be born with us. Mr. Locke does not admit them, any more than he admits innate ideas. He has doubtless had good reasons for opposing himself on this point to ordinary prejudices, for the name of ideas and principles is greatly abused. Common philosophers manufacture for themselves principles according to their fancy; and the Cartesians, who profess greater accuracy, do not cease to intrench themselves behind so-called ideas of extension, of matter, and of the soul, desiring to avoid thereby the necessity of proving what they advance, on the pretext that those who will meditate on these ideas will discover in them the same thing as they; that is to say, that those who will accustom themselves to their jargon and mode of thought will have the same prepossessions, which is very true.

My view, then, is that nothing should be taken as first principles but experiences and the axiom of identity or (what is the same thing) contradiction, which is primitive, since otherwise there would be no difference between truth and falsehood; and all investigation would cease at once, if to say yes or no were a matter of indifference. We cannot, then, prevent ourselves from assuming this principle as soon as we wish to reason. All other truths are demonstrable, and I value very highly the method of Euclid, who, without stopping at what would be supposed to be sufficiently proved by the so called ideas, has demonstrated (for instance) that in a triangle one side is always less than the sum of the other two. Yet Euclid was right in taking some axioms for granted, not as if they were truly primitive and indemonstrable, but because he would have come to a standstill if he had wished to reach his conclusions only after an exact discussion of principles. Thus he judged it proper to content himself with having pushed the proofs up to this small number of propositions, so that it may be said that if they are true, all that he says is also true. He has left to others the task of demonstrating further these principles themselves, which besides are already justified by experience; but with this we are not satisfied in these matters. This is why Apollonius, Proclus, and others have taken the pains to demonstrate some of Euclid's axioms. Philosophers should imitate this method of procedure in order finally to attain some fixed principles, even though they be only provisional, after the way I have just mentioned.

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[1] Erdmann, *Leibnitii Opera Philosophica*, pp. 136–139. — Tr.

As for ideas, I have given some explanation of them in a brief essay printed in the "Actes des Sçavans"[1] of Leipzig for November, 1684 (p. 537), which is entitled *Meditationes de Cognitione, Veritate, et Ideis;*[2] and I could have wished that Mr. Locke had seen and examined it; for I am one of the most docile of men, and nothing is better suited to advance our thought than the considerations and remarks of clever persons, when they are made with attention and sincerity. I shall only say here, that true or real ideas are those whose execution we are assured is possible; the others are doubtful, or (in case of proved impossibility) chimerical. Now the possibility of ideas is proved as much *a priori* by demonstrations, by making use of the possibility of other more simple ideas, as *a posteriori* by experience; for what exists cannot fail to be possible. But primitive ideas are those whose possibility is indemonstrable, and which are in truth nothing else than the attributes of God.

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[1] The "Acta Eruditorum," Lipsiae, 1682–1731. — Tr.

[2] Gerhardt, Vol. 4, pp. 422–426; Erdmann, pp. 78–81. Translated in part by Sir William Hamilton, *Lectures on Logic*, Lect. X., ¶ XXX., pp. 127–129, Amer. ed.; and complete by George M. Duncan, *The Philosophical Works of Leibnitz*, pp. 27–32, New Haven: Tuttle, Morehouse, & Taylor, 1890; also by Professor Thomas Spencer Baynes, in the Appendix to his edition of the Port Royal Logic. — Tr.

I do not find it absolutely essential for the beginning or for the practice of the art of thinking to decide the question whether there are ideas and truths born with us; whether they all come to us from without or from ourselves; we will reason correctly provided we observe what I have said above, and proceed in an orderly way and without prejudice. The question of the origin of our ideas and of our maxims is not preliminary in Philosophy, and we must have made great progress in order to solve it successfully. I think, however, that I can say that our ideas, even those of sensible things, come from within our own soul,[1] of which view you can the better judge by what I have published[2] upon the nature and connection of substances and what is called the union of the soul with the body. For I have found that these things had not been well understood. I am nowise in favor of Aristotle's *tabula rasa;* and there is something substantial in what Plato called *reminiscence.* There is even something more; for we not only have a reminiscence of all our past thoughts, but also a presentiment of all our future thoughts. It is true that this is confused, and fails to distinguish them, in much the same way as when I hear the noise of the sea I hear that of all the particular waves which make up the noise as a whole, though without discerning one wave from another. Thus it is true in a certain sense, as I have explained, that not only our ideas, but also our sensations, spring from within our own soul, and that the soul is more independent than is thought, although it is always true that nothing takes place in it which is not determined, and nothing is found in creatures that God does not continually create.

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[1] The French is: "de nostre propre fonds." — Tr.

[2] In the "Journal des Savants," June, 1695. For the piece, *cf.* Gerhardt, Vol. 4, pp. 477 *sq.* (first sketch 470 *sq.*); and the portion of his introduction nd notes referring to the same, Vol. 4, pp. 414–417; Erdmann, pp. 124–128; *f.* also pp. 129–136. For the translation, Appendix, pp. . — Tr.

In Book II., which comes to the details of ideas, I admit that the reasons brought forward by Mr. Locke to prove that the soul sometimes exists without thinking of anything, do not appear to me convincing, unless he gives the name of thoughts to those perceptions only which are sufficiently noticeable to be distinguished and retained. I hold that the soul (and even the body) is never without action, and that the soul is never without some perception: even in dreamless sleep we have a confused and dull sensation of the place where we are; and of other things. But even if experience should not confirm the view, I believe that it may be demonstrated. It is much the same as we cannot prove absolutely by experience whether there is a vacuum in space, and whether there is rest in matter. Nevertheless, questions of this kind appear to me, as well as to Mr. Locke, to be decided demonstratively.

I admit the difference which he puts with much reason between matter and space; but as for the vacuum, many clever people have believed in it. Mr. Locke is of this number. I was nearly persuaded of it myself; but I gave it up long ago. And the incomparable Mr. Huygens, who was also for the vacuum and the atoms, began at last to reflect upon my reasons, as his letters can testify. The proof of the vacuum derived from motion, of which Mr. Locke makes use, assumes that body is originally hard, and that it is composed of a certain number of inflexible parts. For in this case it would be true, whatever finite number of atoms might be taken, that motion could not take place without a vacuum. But all the parts of matter are divisible and even pliable.

There are also some other things in this second book which arrest my attention: for example, when it is said (chap. 17) that infinity should be attributed only to space, time, and numbers. I believe, indeed, with Mr. Locke that, properly speaking, we may say that there is no space, time, nor number which is infinite, but that it is only true that however great[1] may b a space, a time, or a number, there is always another greater than it without end; and that thus the true infinite is not found in a whole composed of parts. It is none the less, however, found elsewhere; namely, in the *absolute*, which is without parts, and which has influence over compound things, because they result from the limitation of the absolute. The *positive infinite*, then, being nothing else than the absolute, it may be said that there is in this sense a positive idea of the infinite, and that it is anterior to that of the finite. For the rest, in rejecting a composite infinite, we do not deny the demonstrations of the geometers *de Seriebus infinitis*, and particularly what the excellent Mr. Newton has given us, not to mention my own contributions to the subject.

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[1] Gerhardt's text seems here, for some reason, to be defective. It read thus: "Mais qu'il est seulement vray que pour grand que luy sans fin," etc Erdmann's seems the more correct, and is therefore followed in the translation It reads thus: "Mais qu'il est seulement vrai que pour grand que soit u espace, un tems, ou un nombre, il y en a toujours un autre plus grand que lu

As for what is said (chap. 30) *de ideis adæquatis*, it is allowable to give to the terms the signification which one finds pertinent. Yet without finding fault with Mr. Locke's meaning, I put degrees in ideas, according to which I call those *adequate* in which there is nothing more to explain, much the same as in numbers. Now all ideas of sense-qualities, as of light, color, heat, not being of this nature, I do not reckon them among the adequate. So it is not through themselves, nor *a priori*, but through experience, that we know their reality or possibility.

There are further many good things in Book III. in which he treats of words or terms. It is very true that everything cannot be defined, and that sense-qualities have no *nominal definition:* thus they may be called primitive in this sense; but they can none the less receive a *real definition.* I have shown the difference between these two kinds of definition in the meditation[1] cited above. The *nominal definition* explains the name by the marks of the thing; but the *real definition* makes known *a priori* the possibility of the thing defined. For the rest, I strongly commend Mr. Locke's doctrine of the demonstrability of moral truths.

The fourth or last book, which treats of the knowledge of truth, shows the use of what has just been said. I find in it, as well as in the preceding books, an infinite number of beauti-

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sans fin." p. 138 a. *Cf.* also *Leibniz's New Essays concerning the Human Understanding.—A Critical Exposition*, by John Dewey, Ph.D. pp. 190. Chicago: S. C. Griggs & Co., 1888.—Tr.

[1] I.e. *Meditationes de Cognitione, Veritate, et Ideis.*—Tr.

ful reflections. To make suitable remarks upon them would be to make a book as large as the work itself. It seems to me that the axioms receive therein a little less consideration than they deserve. The apparent reason for this is that, excepting those of the mathematicians, we ordinarily find none which are important and solid: I have tried to remedy this defect. I do not despise identical propositions, and I have found that they are of great use even in analysis. It is very true that we know our own existence by an immediate intuition, and that of God by demonstration; and that a mass of matter, whose parts are without perception, cannot make a thinking whole. I do not despise the argument invented some centuries ago by Anselm, archbishop of Canterbury, which proves that the perfect being must exist; although I find that the argument lacks something, because it assumes that the perfect being is possible. For if this single point were proved in addition, the whole demonstration would be complete.

As for the knowledge of other things, it is very well said, that experience alone does not suffice for a sufficient advance in Physics. A penetrating mind will draw more conclusions from some quite ordinary experiences, than another could draw from the most choice; besides, there is an art of experimenting upon and, so to speak, questioning nature. Yet it is always true that we can make progress in the details of Physics only in proportion as we have experience.

Our author shares with many able men the opinion that the forms of logic are of little use. I should be quite of another opinion, and I have often found that the paralogisms, even of mathematics, are the faults of form. Mr. Huygens has made the same observation. Much might be said upon this point, and many excellent things are despised because the use of which they are capable is not made of them. We are inclined to despise what we have learned in the schools. It is true we learn there many useless things; but it is good to exercise the function *della Crusca*,[1] *i.e.* to separate the good from the bad.

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[1] "*La Crusca*, a celebrated academy of Florence, founded in 1582, for the purpose of maintaining the purity of the Italian language, that is to say, of separating the bran (*crusca*) from the flour: hence the name." Duncan's note. *Philos. Works of Leibnitz*, p. 378.

Mr. Locke can do this as well as any one whatsoever; and in addition he gives us important thoughts of his own invention; his penetration and fairness appear everywhere.[1] He is not only an assayer, but he is also a transmuter by the increase of good metal he gives. Should he continue to present it to the public, we should be greatly indebted to him.

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[1] Erdmann omits this clause. — Tr.

II

SPECIMEN OF THOUGHTS UPON THE FIRST BOOK OF THE ESSAY ON HUMAN UNDERSTANDING

[*From the French*]

In order to prove that there are no ideas born with us, the excellent author of the Essay on Human Understanding adduces experience, which shows us that we need external occasions in order to think of these ideas. I agree with him, but it does not seem to me that it follows that the occasions which cause us to see them, cause them to spring into being. And this experience cannot determine whether it is through immission of a species or by impression of outlines upon an empty tablet, or whether it is by the development of what is already in us that we perceive ourselves. It is not extraordinary that there be somewhat in our mind of which we are not always conscious. Reminiscence shows us that we often have difficulty in remembering what we know, and in seizing what is already in the enclosure and possession of our understanding. This proving to be the truth in acquired knowledge, nothing prevents its being also true in the case of that which is innate. And, indeed, there is still more difficulty in perceiving this last, since it has not yet been modified and detailed by experience, as is the acquired, of which often the circumstances remind us.

The author undertakes to show in particular that impossibility and identity, whole and part, etc., are not innate ideas. But I do not understand the force of the proofs he brings. I admit that it is difficult to make men perceive distinctly these metaphysical notions, for abstraction and thought cost them effort. But one may have in himself that which he has difficulty in distinguishing there. Something else, however, than the idea of identity is necessary to answer the question, which is here proposed, viz.: Whether Euphorbus and Pythagoras and the cock,[1] in which the soul of Pythagoras dwelt for some time, were always the same individual, and it does not at all follow that those who cannot solve this question have no idea of identity. What is clearer than the ideas of geometry? Yet there are some questions which we have not yet been able to decide. But that one which considers the identity of Pythagoras following the story of his metempsychosis is not one of the most impenetrable.

Regarding the idea of God, he brings forward examples of some nations who have had no such knowledge. M. Fabritius, a very distinguished theologian of the late Elector Palatine Charles Louis, has published the "L'Apologie du genre humain contre l'accusation de l'Atheisme," in which he replies to such passages as are here cited. But I do not enter into this discussion. Suppose there are men, and even peoples, who have never thought of God; we may say that this fact proves only that there has not been an occasion sufficient to awaken in them the idea of the supreme substance.

Before passing to the complex principles or primitive truths, I will say that I agree that the knowledge, or better, the actual consideration (*envisagement*), of ideas and truths is not innate, and that it is not necessary that we have distinctly known them in a former state of being, according to Plato's doctrine of reminiscence. But the *idea* being taken for the immediate internal object of a notion, or of what the logicians call an incomplex term, there is nothing to prevent its always being in us, for these objects can subsist when they are not perceived. Ideas and truths may, furthermore, be divided into primitive and derivative: the knowledge of the primitives does not need to be formed; they must be distinguished only; that of the derivative is formed by the understanding and by the reason upon occasion. However, we may say in one sense, that the internal objects of this knowledge, that is to say, the ideas and truths themselves, primitive as well as derivative, are all in us, since all the derivative ideas and all the truths deduced from them result from the relations of primitive ideas which are in us. But usage makes it customary to call innate the truths to which credence is given as soon as they are heard, and the ideas whose reality (that is to say, the possibility of the thing which it represents) is of the number of these truths, and needs not to be proved by experience or by reason; there is then considerable ambiguity in this question, and it suffices at the last to recognize that there is an internal light born with us, which comprises all the intelligible ideas and all the necessary truths which are only a result of these ideas and need not experience in order to be proved.

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[1] *Cf.* Locke, *Philos. Works* (Bohn's ed.), Vol. 1, p. 181 *sq.*, and note. — Tr.

To reduce, then, this discussion to something practical, I believe that the true end one should have is the determination of the grounds of truths and their origin. I admit that contingent truths, or truths of fact, come to us by observation and experience; but I hold that necessary derivative truths depend upon demonstration, *i.e.* upon definitions or ideas, united with the primitive truths. And the primitive truths (such as the principle of contradiction) do not come at all from the senses or from experience, and cannot be perfectly proved, but from the natural internal light, and this is what I mean in saying that they are innate. The geometers also have very well understood this. They could prove passably their propositions (at least, the most important of them) by experience, and I do not doubt that the ancient Egyptian and the Chinese had such an experimental geometry. But the true geometers, above all, the Greeks, have desired to show the force of reason, and the excellence of science, by showing that they can in these matters foresee everything, by the internal light in advance of experience. It must also be admitted that experience never assures us of a perfect universality, and still less of necessity. Some of the ancients laughed at Euclid because he proved what a fool even is not ignorant of (as they say), viz.: that in a triangle two sides together are greater than the third. But those who know what genuine analysis is, are much obliged to Euclid for his proof. And it is much that the Greeks, if less exact in other things, have been so much so in geometry. I attribute it to providence; and I believe without that we should hardly know what demonstration is. I also believe that it is principally in that respect that we are thus far superior to the Chinese.

But it is needful further to look a little at what our clever and celebrated author says in chapters 2 and 3, to sustain his point that there are no innate principles. He is opposed to the universal consent alleged in their favor, maintaining that many races doubt even this famous principle that two contradictories cannot be true or false at once, and that the greater part of the human race ignores it altogether. I admit that there are an infinite number of persons who have never made a statement of them. I have indeed seen authors who desired to refute them, apprehending them, without doubt, wrongly. But where shall we find one who does not avail himself of them in practical life, and who is not offended with a liar who contradicts him? Nevertheless, I do not ground myself wholly upon universal consent; and as for propositions which are approved as soon as they are proposed, I admit that it is not at all necessary for them to be primitive or proximate to them, for they may be very common facts. As for this statement which teaches us that one and one make two (which the author brings forward as an example), it is not an axiom, but a definition. And when he says that sweetness is a different thing from bitterness, he states only a fact of primitive experience, or of immediate perception. Or better, we have only to say that the perception of what is understood by the term sweetness is different from the perception of that which is understood by the term bitterness. I do not here distinguish at all the practical truths from the speculative; they are always the same. And as we can say that it is one of the most manifest truths, that a substance whose knowledge and power are infinite should be honored, we can say that it emanates at once from the light which is born with us, provided one can give his attention to it.

SPECIMEN OF THOUGHTS UPON THE SECOND BOOK

[*From the French*]

It is very true that our perceptions of ideas come either from the external senses or from the internal sense, which may be called reflection; but this reflection is not limited to the operations alone of the mind, as is stated (chap. 1, § 4); it reaches even to the mind itself, and it is in the consciousness of self that we perceive substance.

I admit that I am of the opinion of those who believe that the soul always thinks, although often its thoughts are too confused and too feeble for it to be able distinctly to remember them. I believe I have certain proofs of the continual activity of the soul, and I believe also that the body can never be without motion. The objections raised by the author (Book II., chap. 1, §§ 10 to 19) can be easily met by what I have just said or am about to say. They are based upon the experience of sleep, which is sometimes dreamless; and in fact there are some persons who do not know what it is to dream. However, it is not always safe to deny everything that is not perceived. It is much the same as when there are people who deny the corpuscles and insensible motions, and laugh at the particles because they cannot be proved. But some one will tell me that there are proofs which force us to admit them. I reply that there are in like manner proofs which compel us to admit perceptions which are not marked enough for us to remember them. Experience, furthermore, favors this view; for instance, those who have slept in a cold place notice that they have had while sleeping a confused and feeble sensation. I know a person who wakes up when the lamp which he always keeps lighted at night in his room goes out. But here is something more precise, and which shows that if we did not always have perceptions, we could never be waked up from sleep. Let a man who is sleeping be called by several persons at once, and let it be assumed that the voice of each by itself is not loud enough to awake him, but that the noise of all these voices together awakes him: let us take one of them; it is very necessary that he be touched by this voice in particular, for the parts are in the whole, and if each one by itself does nothing at all, the whole will do nothing, either. Yet he would have continued to sleep, if the voice had been a single one, and that, too, without remembering that he had been called. Thus there are some perceptions too feeble to be noticed, although they are always retained, but among an infinite number of other small perceptions which we have continually. For neither motions nor perceptions are ever lost;

both continue always, only becoming indistinguishable through composition with many others. One might reply to this reasoning, that each voice by itself effectively touches the body, but that a certain quantity of it is needed in order that the motion of the body may reach the soul. I reply, that the least impression reaches the entire body, and consequently to that part whose motions correspond to the actions of the soul. And accordingly no principle of limitation can be found, however necessary a certain quantity may be. I do not wish to insist upon the interest that the immortality of the soul has in this doctrine. For if the soul is passive, it is also without life, and it seems that it can be immortal only by grace and by miracle — a view which there is reason to disapprove. I admit, however, that our interest is not the measure of truth, and I do not wish to mix here theological reasons with those of philosophy.

III

[*From the German*]

Essai Philosophique concernant l'Entendement humain, où l'on montre, quelle est l'entendue de nos connoissances certaines et la maniere dont nous y parvenons, traduit de l'Anglois de Mr. Locke par Mr. Pierre Coste, sur la quatrieme edition, revue, corrigée et augmentée par l'Auteur. A Amsterd. 1700 in 4to.

Philosophischer Versuch, betreffend den Menschlichen Verstand, alwo gewiesen wird, wie weit sich unsre gewisse Erkändtnüssen erstrecken, und auf wass Weise wir darzu gelangen; ausz den Englischen übersetzet von Hrn. Peter Coste nach der vierten vom Autor selbst übersehenen, verbesserten und vermehrten Edition. 5. Alph. 12. Bog.

It[1] is unnecessary for us to give a complete abstract of this notable book, after the author himself has relieved us of this task, since in the year 1688 he prepared such an abstract for Mr. Clerc for insertion in his "Bibliothèque universelle,"[2] T. VIII., p. 49 *sqq.*, before he gave it to the press. In the year 1690 it appeared first in London in folio, and Mr. Clerc again published lengthy excerpts in the said "Bibliothèque universelle," T. XVII., p. 399. Soon afterwards a new English edition appeared, enlarged with many pieces, and in particular with an entire chapter[3] on Identity and Diversity, which he treats in an exceedingly clear and excellent manner.

In the second edition mentioned, Locke acknowledges that he erred in the first edition when he assumed, in accordance with the common view, that what brings the will to any change of action in the course of arbitrary actions is the assurance of a much greater good. For when he considered the matter more carefully, he found that a present *unrest* which consists in *desire* or is constantly accompanied by the same, places its limits upon the will. For the reasons for this view, see Book

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[1] From the "Monatliche Auszug," Sept. 1700, pp. 611–636. — Tr.

[2] "Bibliothèque universelle et historique," Amsterdam, 1686–1693. — Tr.

[3] In the present edition this chapter is 27 in the second book. — Gerhardt's note.

II., chap. 21. He will gladly, however, be informed of a better view. Some time after, a third, and in the year 1699, a fourth, edition appeared, in which last edition Locke either further explained his previous thoughts by many additions or supported them by wholly new grounds. Peter Coste made his translation on the basis of this edition, and when Locke sent him his manuscript, had worked upon the same for more than two years. Locke himself considered this translation a good one and presented his thanks accordingly, so that consequently it must be the more welcome by a great deal to us.

To enumerate all the new additions would take too long; hence we will content ourselves with the mention of the two most important, which make two separate chapters, of which the first is Book II., chap. 33, and treats of the Association of Ideas.

Locke says there is almost no one who does not find something in the opinions, conclusions, and actions of other people which seems to him fantastic and extravagant, and is so in fact. Every one may have eyes keen-sighted enough to mark the least fault of this kind in the case of another, if only it may be distinguished from his own, and he himself may have sufficient understanding to condemn the same, although he also may have in his own opinions and his own conduct the greatest errors of which he might be aware, and of which, where not impossible, he may yet with difficulty be convinced.

This arises, he continues, not merely from self-love, although this passion has often a great part therein. For one daily sees such people lying sick with the same disease, who are otherwise skilful and whole enough to make nothing of their own merits.

This defect of reason is customarily ascribed to education and to the force of prejudice, and this, according to the common opinion, not without cause, but according to Locke's statement, this explanation reaches not to the root of the disease, and does not show completely its origin and peculiarity.

He himself explains it as follows: Some of our ideas [his own words] have among themselves an exact correspondence and connection. The obligation and highest perfection of our reason consists in the fact that it reveals such ideas and holds them together in the selfsame unity and correspondence as that which is grounded in their particular nature. There is besides this another bond of ideas which depends upon chance or custom, so that the ideas which naturally are wholly unrelated become so exactly united in the minds (*esprit*[1]) of some men, that they can with difficulty be separated from one another. They accompany one another constantly, and one can no sooner present itself to the understanding (*intellectui*) than the others or, indeed, more of them, so united are they, appear also, nor can they at all be separated from one another.

This association of ideas, which the mind makes in itself either voluntarily or by chance, is the sole source of the defect of which we now speak. And as this strong union of ideas is not originally caused by nature, it is for this reason wholly different in different persons, viz.: according to their different inclinations, education, and self-interests.

That there are such associations of ideas, which custom begets in the minds of most men, no one, according to Locke's statement, can doubt, who with much earnestness considers himself and other people. And to this cause can perhaps with convenience and reason be ascribed the greater part of those sympathies and antipathies which one finds among men, and which work as strongly and produce as regular effects, as i they were natural, which fact then makes them to be called so although at first view they had no other origin than the chance connection of two ideas, which the strength of a first impression, or of an excessively great compliance, so firmly united that they always thereafter remain together in the mind o the man, as though only a single idea. Locke, however, in n respect denies that there are wholly natural antipathies whicl depend upon our original constitution and are born with us He believes, however, that with proper consideration ma would recognize the most of those which have been regarde as natural, as in the beginning caused by impressions whic were not heeded, whether they were suggested sufficientl early or through a ridiculous fancy. Locke notices incidentall the difference which may be made between natural and a quired antipathies, so that those who have children or wh must educate them, may see how much heed they should take of this principle, and with what care this disorderly union of ideas in the mind of the youth should be prevented.

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[1] This word I have voluntarily retained here and for the most part in wh follows, because it cannot be expressed quite clearly in German. — Leibnitz note, Gerhardt, p. 27.

Perhaps we should retain the word "esprit" in English. — Tr.

He thereupon points out by some examples how such a union of ideas, which are not of themselves united, yet depend one upon another, is sufficient to impede our moral and natural action, yea more, our notions themselves.

The ideas of goblins or of spirits agree as little with darkness as with light; if, however, a foolish maid instils and awakens these different ideas in the mind of a child, as though they were connected with each other, the child during his entire life will perhaps not be able to separate them from each other; so that the darkness ever more will seem to him to be accompanied with these horrible ideas.

If any one has suffered a grievous wrong on account of another, he thinks very often of the persons and the deed, and while he thus strongly or for a long time thinks thereupon, he at the same time glues these two ideas together so firmly, that he makes them almost one, as it were, and never remembers the person but that the wrong received also enters his head. And while he can scarcely distinguish these two things, he has just as much aversion for the one as for the other. Thence it comes, Locke adds, that hatred arises from slight and worthless reasons, and quarrels are taken up and continued in the world.

One of Locke's friends was wholly cured of madness by a certain man through a very painful operation, for which service he acknowledged himself under great obligation to him throughout his life, as he was so circumstanced that he required from no one a greater service during his life. Reason or gratitude might suggest to him what they would, yet he could never bear the sight of this surgeon. For as the sight of him always brought again to mind the idea of the very great pain which he had been obliged to endure at his hands, he could not endure this idea, so violent were the impressions it produced in his mind.

Many children hold their books, which were the occasion thereto, accountable for most of the ill treatment they endured at school, and they unite these ideas so well that they regard a book with great disgust, and all their life study and books cannot win their love, because to them reading, which might otherwise have greatly delighted them, became a genuine torture.

An example notable for its singularity is the following which an eminent man, who assured him he had himself seen it, relates to Locke: A young man had learned to dance very prettily and perfectly. There chanced to stand, however, in the hall where he first learned, an old trunk, the idea of which combined so imperceptibly with his turns and steps in the dance, that although he could dance incomparably well in this hall, he could do this only when the old trunk was there; in other places, however, he could not dance at all, unless the old trunk itself or one like it stood in its accustomed place.

The *habitus intellectuales* which are contracted through suc association of ideas, are, as Locke further informs us, just a strong and numerous, even though very little heeded. Supposing the ideas of being and matter were very strongly united t either by education or by an excessively great application t these two ideas, according as they are combined in the mind what notions and reasonings would they not produce concerning different spirits? If a custom accepted from childhoo up had united a form or figure with the idea of God, into wha absurdities would such a thought in the contemplation of deit not plunge us? We shall no doubt find, Locke adds, that i is nothing else than similar ill-grounded and unnatural comb nations of ideas, which break the path for the many conflictin sects in philosophy and religion; for it is not to be suppose that each member of those different sects is willingly deceive and against his better knowledge and conscience rejects th truth demonstrated to him by clear evidence. It is indee certain that sometimes interest assists greatly in this sort thing, yet no one could affirm that it could captivate and lea astray whole societies, so that they all, none excepted, shou affirm plain and deliberate falsehoods. For it must be th some at least do what others pretend to do, viz.: seek tru sincerely.

Therefore there must be something which blinds their u derstanding and hinders them from recognizing the falseho of what they consider as pure and refined truth. If now investigate accurately what takes reason prisoner and darke the understanding of otherwise sincere people, we find that it is simply and solely some free ideas, which, properly speaking, really have no bond among themselves, but which, by education, custom, and uninterrupted action on their part, are so united in the mind that they can no more be separated and distinguished from one another than a single idea. Thence it comes, Locke continues, that often the crudest things are taken for worthy opinions, absurdities for demonstrations, and intolerable and absurd results for strong and fluent reasonings.

The other chapter we promised to present, treats of Enthusiasm, and is the 19th in the 4th book. Locke's thoughts thereupon are as follows:—

Whoever will earnestly seek for truth must first before all things acquire a love for it. Whoever does not love the truth, to him we must necessarily attribute the opposite. Hence we can rightly say, that among those who pretend to seek it, there are very few who really love it. We may recognize a genuine seeker of the truth, since he does not assume for a statement any greater certainty than the proofs upon which he grounds it warrant. Whoever steps beyond this limit lays hold of the truth not out of love for it, but from another indirect purpose. For while the unquestionable clearness of a statement truly consists in the evidence for it (excepting those which are sufficiently clear of themselves), yet it is plain that so far as space is given to assent beyond the unquestionable clearness of a proposition, the remaining portion of the assurance is not drawn from love for the truth, but from another passion. For as it is impossible that love for the truth can bring any one to give to any proposition an assent greater than that certified by the truth itself, just so is it also impossible that any one out of love for the truth can assent to a statement in view of evidence of such a character that from it he cannot see whether the statement is true; which would be actually equivalent to the assumption that the proposition is a truth because possibly, or, indeed, probably, it seems not to accord with the truth.

Locke adds, it follows indisputably from this evil disposition of the mind, that men assume the authority to dictate their own opinions to others. For how should one who has imposed on his own belief, not be willing also to impose on the belief of others? How is it to be expected that one will use valid arguments and proofs in dealing with others, who is not accustomed to use them in dealing with himself, who does violence to his own powers, who tyrannizes over his own mind, and misuses the advantage which truth alone has, viz.: that it assents to nothing but what is indisputably true?

After Locke has laid this foundation, he proceeds to the investigation of Enthusiasm, to which some people ascribe as much power as to faith and reason, and would establish revelation without the aid of reason, whereby, however, they would at once destroy both reason and revelation, and without any reason erect in their place the fancies forged in their own brain, which they choose as the plumb-line of their opinions and conduct. Reason is nothing else than a natural revelation, whereby God bestows upon men that portion of truth which he has poured into the capacity of their natural powers Revelation is natural reason, enlarged by a new set of discoveries flowing immediately from God, the ground (*raison*) o which is the truth by testimony and proof they offer tha these discoveries actually come from God.[1] Whoever, therefore, destroys reason to make room for revelation, extinguishes both these lights at the same time. As, however, men find that an immediate revelation is a much easier means o strengthening their opinions and of directing their conduc than the labor of arranging all according to strict reasoning which is usually irksome, prejudiced, and for the most par without successful progress; so it is not to be wondered a that they often pretend revelations and persuade themselve that God directs them in particular as regards their action and opinions, and especially in those things which they cann justify by the principles of reason. If their minds are onc possessed with this thought, the most absurd opinions whic are firmly impressed upon their fancy, must seem to be illuminations coming from the Spirit of God and having divin authority. Every extraordinary thing to which they are le by a strong impulse, they consider as certainly a divine ca which they must follow, and as a command from on high in whose execution it is impossible to err.

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[1] On this whole discussion, *cf.* an article by the translator entitled "Revelation, Inspiration and Authority," in "The Andover Review," April 18 — Tr.

This is, properly speaking, what is meant by Enthusiasm, which is not adjusted to reason nor to divine revelation, but springs forth only from the imagination of a heated and conceited spirit, and which, as soon as it has taken a little root, plays much more strongly upon the opinion and actions of men than reason or revelation separately or together.

Although now the extravagant actions and opinions, wherein enthusiasm has involved men, should spur them on to be more on their guard and to avoid the false *principia*, which lead astray both their belief and their conduct; yet through its love for the extraordinary, through its ease and illumined by its glory, and through its extraordinary paths to knowledge it has come to pass that the laziness, ignorance, and vanity of many are so tickled, and they are brought to such a point, that after they are captivated by such ways of an immediate revelation, of an illumination without search, of a certainty without proof and investigation, it is very difficult to bring them out of it again.

They are transported beyond reason, and reason in their case perishes. They see a light infused into their understanding and can no longer be deceived. This light visibly appears as the clearest sunbeam and requires no other proof than its own clearness. They feel, according to their statements, the hand of God moving them within; they feel the impulses of the Spirit, and cannot be mistaken in their feeling. Thus they persuade themselves that reason has nothing to do with what they see and feel in themselves. The things which they clearly experience are beyond all doubt, and need no proof; and so of all the rest of their strange talk. They are sure of these things because they are sure of them, and their opinions are correct because they are firmly fixed in their mind. For this is the upshot of their words when stripped of the metaphors of *hearing* and *feeling* in which they are clothed.

Locke investigates the ground of this inner light and feeling, upon which these people so firmly base themselves, and speaks thus: Is this seeing of the light a perception of the truth of a certain particular statement, or perhaps of this, that it is a revelation from God? Is this feeling a perception of an inclination, which comes from a fancy to do something, or from the spirit of God, which begets in it this inclination? These are two wholly different feelings, which must be carefully distinguished from one another if we would not deceive ourselves. I can perceive the truth of a proposition; but I cannot thereby know as yet whether it is an immediate revelation from God. I can perceive the truth of a proposition in Euclid without its being or my knowing that it is a revelation. I may also know that I did not attain this knowledge through natural means, thence may indeed conclude that it is revealed to me, but I cannot thereby yet know it is a revelation from God; because there may be minds which without a divine commission for this work arouse these ideas in me and set them in such order in my mind that I may perceive their connection. So that the knowledge of a proposition, which enters my head, I know not how, is thus not an evidence that it comes from God. Still less is a firm persuasion that this fancy is true, a certain evidence that it comes from God, or that it is true.

We may call such a fancy *sight* or *light*, yet it is nothing more than belief and confidence.[1] For if the proposition under discussion be one which they have imagined, but do not know to be true, it cannot be *seeing*, but *believing*. One may also give to such fancy any name he pleases. What I believe, I must put forth as true upon another's testimony, and must know certainly in the case that this testimony is given; for without this my belief would be groundless. I must see whether God reveals this to me, or whether I see nothing. Thus the issue is, that I know how I am to know that God reveals something to me, that this impression in my soul occurs through the Holy Spirit, and that consequently I am bound to follow it. If I do not know this, my confidence, great as it may be, is without the least foundation, and all the light with which I perceive myself illumined, is but enthusiasm. For whether the proposition supposed to be revealed, be evidently true in itself, or visibly probable, or whether it be difficult to vindicate it by the ordinary paths of knowledge, this must nevertheless before all things be clearly established and proved, that God has revealed this proposition, and that what I take as a revelation certainly comes of itself into my mind, and is no illusion, which some one else has thrust in or my own fancy has awakened. Until one has come this far, all confidence that this revelation comes from God is a mere conjecture, and all this light which dazzles one is nothing but an ignis fatuus, which will unceasingly lead us into this circle: *This is a revelation because I firmly believe it; and I believe it because it is a revelation.*

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[1] The German is "Credulität und Confidentz." — Tr.

It follows from this that those who imagine that they have such revelations of this or that truth must be assured that it is God who has revealed it to them. For to say, as they generally do, that they know it by the light which it brings with it, which shines and flashes in their souls, and which they cannot resist, means only that it is a revelation because they believe it certainly is one; since all the light of which they speak is nothing but a strong imagination which is firmly fixed in their mind, and yet has not the least ground that it is a truth. For they must consider that to assume accepted grounds as reasonable and as a proof that it is a truth, is a necessary acknowledgment that they have no such (grounds).[1] Because, if they have such, they receive this truth no longer as a revelation, but as a truth established upon common grounds. And if they believe it to be true, because it is no revelation, and if they have no other reason to prove it a revelation than simply because they are completely persuaded of its truth, without any other ground and only on account of this fancy, then they believe it to be a revelation only because they strongly believe it to be a revelation. Who does not see that if we build upon such grounds, we make our own fancy the only rule of our opinions and conduct, and consequently subject ourselves to the strangest errors and vexations. For once for all the strength of our opinions is no proof of their correctness. Meanwhile men can approve an error as a truth, as may be seen in the case of those zealous people who maintain in the sharpest manner two propositions contrary to one another.

In reference to which Locke well says, that if the light, which every one thinks he has in himself, and which in this case is nothing but the strength of his own opinion, be a proof that his thought comes from God, then we must conclude that all contrary opinions have the right to pass as divine inspirations; and God would be not only the father of light, but also of wholly opposite lights, which lead men in ways wholly contrary.

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[1] The text is: "Denn dieses müssen sie vor raisonable und von einigem Beweise halten, der da zeige, dass es eine Warheit sey, genommene Gründe annehmen, dass sie erkennen müssen, wie sie dergleichen nicht haben." — Tr.

Therefore Locke concludes that he who does not wish to fall into a mass of disorderly delusions and errors must first test thoroughly this inner light which offers itself as a guide. God, he says, does not destroy the man when he makes a prophet. He leaves all his faculties in their natural condition, so that he may thereby judge whether the inspirations which he feels within have sprung from God or not. If God will have us acknowledge the truth of a proposition, he permits us to see this truth either through the ordinary paths of natural reason, or he makes us know that it is a truth which we must receive upon his authority, while he convinces us by certain marks which reason cannot reject that it comes from him. I will not, however, Locke adds, say by this, that we are to examine by reason whether a proposition thus revealed to us by God may be proved by natural principles, and if not we may reject it; but I will say, that we must consult reason and by its aid see whether it be a revelation from God or no. For if reason finds it to be a divine revelation, it declares for it as such from that hour on as well as for any other truth, and makes it one of its rules, so that it cannot be rejected.

If this inner light, or a proposition which presents itself in our mind as revealed, accords with the principles of reason or with the word of God which is an attested revelation, we have the warrant of reason for it, and may accept this light as true, and direct our faith and walk accordingly. If, however, this light has the witness or proof of neither of these rules, we cannot consider it as a revelation; nay more, as a truth. For if we at the same time believe it to be a revelation, that does not, however, make it so; it may, however, be shown by some other mark to be really a revelation. The old prophets, when they were to receive revelations from God, had other proof than the inner light which assured them that these revelations really came from God. They imagined not only that their imaginations came from God, but they had also external signs which convinced them that God was the author of their revelation. And if they were to convince others of the same, they received beforehand a special power to set forth the truth of the commission given them of Heaven with visible signs. Thus Moses saw a burning bush which was yet not consumed and heard a voice out of the bush. This was something more than an inner feeling of an impulse to free the children of Israel from the hands of Pharaoh. Yet, Moses did not believe that this was enough to warrant him in going into Egypt with God's commission; until God assured him by still another miracle, of the rod changed into a serpent, that such was his real will, and granted him the power to work precisely similar wonders in the sight of Pharaoh. Precisely similar was it in Gideon's case. These and other examples of the old prophets show sufficiently that they did not believe that an inner vision or their own imagination attested by no other affirmation a sufficient evidence that their imagination came from God; although the Scripture does not everywhere mention that they always asked for or received such proofs.

These few passages from the clever work of Locke, under the guidance of the accurate translator Coste, we have brought forward as specimens. Perhaps we shall have further opportunity to speak of it, when the Latin translation, with which some one[1] is now occupied in England, is published.

In the "Monatliche Auszug" of the year 1701 is found (pp. 73–75) the following addition to the foregoing sketch:—

What Locke says of the connection and accompaniment of ideas is not to be despised, and serves often to arouse the emotions; as for errors and false judgments, however, they spring from other contiguous and peculiar causes, viz.: that one assumes false principles, and imagines that he once had proof of them in his mind, within which now a lapse of memory occurs; and then from incorrect conclusions which he produces from these principles assumed as known, because he gives not the time and labor to investigate all in a formal and orderly way.

[1] Burridge of Dublin. The version appeared in 1701. — Tr.

Meanwhile it is true that the emotions greatly assist this credulity concerning principles and carelessness in false deduction; for one believes and easily draws the conclusion he would gladly have. It is besides noticeable in this book of Locke's, that in his last writings against the Rev. Lord Bishop Stillingfleet he has changed a large part of his opinions concerning the nature of the body contained in this *Tentamen* or Essay on Human Understanding; while in this *Tentamen* he held opinions, in common with modern philosophers, especially the followers of Descartes and Gassendi, that in the body nothing is to be met with but size, solidity or impenetrability, and motion or change; now, however, he begins to hold the opinion that there is something to be found therein not revealed through these qualities. He repudiates, besides, in this essay innate ideas and the natural light, but appears not to distinguish sufficiently the necessary truths arising from possibility, from those others whose ground must be assumed from the experience of realities, and thus must be drawn from without.

Thus he accepts the *tabula rasa* of Aristotle, rather than the implanted (ideas) of Plato. It is true that we do not come upon thoughts in these most abstract matters, without external sensations, but in the case of these necessary truths, such sensations serve more as a reminder than as a proof; which (proof) must come simply and solely from internal grounds, as those do not sufficiently understand who deal little in demonstration proper.

NEW ESSAYS ON THE UNDERSTANDING

By the Author of the System of Pre-Established Harmony

PREFACE

The Essay on the Understanding, by a distinguished Englishman, being one of the most beautiful and esteemed works of this period, I have resolved to make some remarks upon it, because having sufficiently meditated for a long time upon the same subject and upon the greater part of the matters therein touched upon, I have thought that it would be a favorable opportunity to publish something under the title of "New Essays on the Understanding," and to procure a favorable reception to my thoughts, by putting them in so good company. I[1] have thought also that I could profit from the labor of another not only to lessen my own (since in fact it is less difficult to follow the thread of a good author than to work wholly independently), but further to add something to what he has given us, which is always easier than to start from the beginning; for I think I have cleared up some difficulties which he had left in their entirety. Thus his reputation is an advantage to me; having for the rest a disposition to render justice, and very far from wishing to diminish the esteem in which this work is held, I would increase it, if my approval carried any weight. It is true I often differ in my views (from him[1]), but very far from denying the merit of celebrated writers, we bear witness to it, by making known in what and why we differ from their views, when we judge it necessary to prevent their authority from prevailing over reason on some important points; besides, by satisfying such excellent men, we render the truth more acceptable, and it must be supposed that it is principally for truth that they labor.

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[1] Gerhardt's text reads as follows: "J'ai crû encor pouvoir profiter du travail d'autruy non seulement pour diminuer le mien (puisqu'en effect il y a moins de peine à suivre le fil d'un bon auteur qu'à travailler à nouveaux frais en tout), mais encor pour adjouter quelque chose à ce qu'il nous a donné, ce qui est tousjours plus facile que de commencer; car je crois d'avoir levé quelques difficultés qu'il avoit laissées en leur entier. Ainsi sa reputation m'est avantaguese; estant d'ailleurs d'humeur à rendre justice et bien loin de vouloir diminuer l'estime qu'on a pour cet ouvrage, je l'accroistrois, si mon approbation estoit de quelque poids. Il est vray que je suis souvent d'un autre avis, mais bien loin de disconvenir du merite des Ecrivains celebres, on leur rend temoignage, en faisant connoistre en quoy et pour quoy on s'eloigne de leur sentiment, quand on juge necessaire d'empecher que leur autorité ne prevaille à la raison en quelques points de consequence, outre qu'en satisfaisant à de si excellens hommes, on rend la verité plus recevable, et il faut supposer que c'est principalement pour elle qu'ils travaillent." — Tr.

In fact, although the author of the Essay says a thousand beautiful things which I commend, our systems are very different. His has more relation to Aristotle, mine to Plato, although we both differ in many things from the doctrine o these two ancient philosophers. He is more popular, and I am compelled sometimes to be a little more *acroamatic* and more abstract, which is not an advantage to me, especiall when writing in a living language. I think, nevertheless, tha by making two persons speak, one of whom sets forth th views drawn from the Essay of this author, and the othe joins thereto my observations, the parallel will be more to th liking of the reader than wholly dry remarks, the reading o which would be interrupted at every moment by the necessit of recurring to his book in order to understand mine. It wil nevertheless be well still to compare sometimes our writings and not to judge of his views except by his own work, althoug I have ordinarily preserved its expressions. It is true that th constraint, which another's discourse, whose thread must b followed, gives in making remarks, has prevented me fro thinking to secure the charms of which the dialogue is susceptible; but I hope the matter will make amends for th defects of the style.

Our differences are upon subjects[2] of some importance. Th question is to know whether the soul in itself is entirely empt as the tablets upon which as yet nothing has been writte (*tabula rasa*) according to Aristotle, and the author of th Essay, and whether all that is traced thereon comes solel from the senses and from experience; or whether the soul contains originally the principles of many ideas and doctrine which external objects merely call up on occasion, as I believ with Plato, and even with the schoolmen, and with all those who interpret in this way the passage of St. Paul (Rom. 2: 15) where he states that the law of God is written in the heart. The Stoics call these principles[1] *prolepses, i.e.* fundamental assumptions, or what is taken for granted in advance. The Mathematicians call them *general notions* (κοιναὶ ἔννοιαι). Modern philosophers give them other beautiful names, and Julius Scaliger in particular named them *semina æternitatis,* also *zopyra, i.e.* living fires, luminous flashes, concealed within us, but which the encounter of the senses makes appear like the sparks which the blow makes spring from the steel. And the belief is not without reason, that these glitterings indicate something divine and eternal which appears especially in the necessary truths. Whence another question arises, whether all truths depend upon experience, *i.e.* upon induction and examples, or whether there are some which have still another foundation. For if some events can be foreseen prior to any proof which may have been made of them, it is manifest that we ourselves contribute something thereto. The senses, although necessary for all our actual knowledge, are not sufficient to give it all to us, since the senses never give us anything but examples, *i.e.* particular or individual truths. Now all the examples which confirm a general truth, whatever their number, do not suffice to establish the universal necessity of that same truth, for it does not follow that what has happened will happen in the same way. For example, the Greeks and the Romans, and all the other peoples of the earth known to the ancients, have always observed that before the lapse of twenty-four hours day changes into night, and night into day. But we would be deceived, if we believed that the same law holds good everywhere else; for since then, the contrary has been experienced in the region of Nova Zembla. And he would still be in error who believed that, in our climates at least, this is a necessary and eternal truth, which will always endure, since we must think that the earth, and the sun even, do not necessarily exist, and that there will perhaps be a time when this beautiful star, together with its whole system, will not longer exist, at least in its present form. Whence it appears that necessary truths such as are found in pure mathematics, and particularly in arithmetic and in geometry, must have principles whose proof does not depend upon examples, nor consequently upon the testimony of the senses, although without the senses it would never have occurred to us to think of them. This distinction must be carefully made, and was so well understood by Euclid, that he often proved by the reason, what is sufficiently seen through experience and by sensible images. Logic also, together with metaphysics and ethics, one of which shapes theology and the other jurisprudence, both natural (sciences), are full of such truths, and consequently their proof can come only from internal principles which are called innate. It is true that we must not imagine that these eternal laws of the reason can be read in the soul as in an open book, as the prætor's edict is read upon his *album* without difficulty and research; but it is sufficient that they can be discovered in us by dint of attention, for which the senses furnish occasions, and successful experience serves to confirm reason, in much the same way as proofs in arithmetic serve for the better avoidance of error in calculating when the reasoning is long. Herein, also, human knowledge differs from that of the brutes: the brutes are purely empirics and only guide themselves by examples; for, so far as we can judge of them, they never attain to the formation of necessary propositions; while men are capable of demonstrative sciences. It is also for this reason that the faculty the brutes have for making *consecutions* is something inferior to the reason of man. The consecutions of the brutes are merely like those of simple empirics, who claim that what has sometimes happened will happen again in a case where something strikes them as similar without being able to judge whether the same reasons hold good. This is why it is so easy for men to entrap the brutes and so easy for simple empirics to make mistakes. This is why persons who have become skilful through age and experience are not exempt (from error) when they depend too much upon their past experience, as has happened to many in civi and military affairs; because they do not consider sufficiently that the world changes, and that men become more skilful by finding a thousand new dexterities, while the deer and hare of the present do not become more cunning than those of th past. The consecutions of the brutes are only a shadow of reasoning, *i.e.* are only connections of the imagination and passages from one image to another, because in a new juncture which appears similar to the preceding they expect anew that connection which they formerly met with, as if things were united in fact because their images are united in the memory. It is true that reason also counsels us to expect ordinarily to see that happen in the future which is conformed to a long past experience, but it is not on this account a necessary and infallible truth, and success may cease when least expected, when the reasons change which have sustained it. Therefore the wisest men do not so commit themselves to it as not to try to discover, if possible, something of the reason of this fact in order to judge when it is necessary to make exceptions. For reason is alone capable of establishing sure rules, and supplying what is wanting to those which were not such by inserting their exceptions; and of finding at length certain connections in the force of necessary consequences, which often furnish the means of foreseeing the result without the necessity of experiencing the sense-connections of images, to which the brutes are reduced, so that that which justifies the internal principles of necessary truths also distinguishes man from the brutes.

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[1] Erdmann and Jacques read: "que lui," which does not occur in Gerhardt text. — Tr.

[2] Erdmann and Jacques read: "objects." — Tr.

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[1] For a very full nomenclature of these principles, see Hamilton's Reid, Note A., § V., Vol. II., pp. 755–770. 8th ed., Edinburgh and London, 1880. — Tr.

Perhaps our clever author will not wholly differ from my view. For after having employed the whole of his first book in rejecting innate intelligence, taken in a certain sense, he nevertheless, at the beginning of the second and in the sequel, admits that ideas, which do not originate in sensation, come from reflection. Now reflection is nothing else than attention to what is in us, and the senses do not give us what we already carry with us. That being so, can it be denied that there is much that is innate in our mind, since we are innate, so to speak, in ourselves? and that there is in us: being, unity, substance, duration, change, action, perception, pleasure, and a thousand other objects of our intellectual ideas? And these objects being immediate to our understanding and always present (although they cannot always be perceived by reason of our distractions and needs), what wonder that we say that these deas with all depending upon them are innate in us? I have made use also of the comparison of a block of marble which has veins, rather than of a block of marble wholly even, or of blank tablets, *i.e.* of what is called among philosophers a *tabula rasa.* For if the soul resembled these blank tablets, truths would be in us as the figure of Hercules is in the marble, when the marble is wholly indifferent to the reception of this figure or some other. But if there were veins in the block which should indicate the figure of Hercules rather than other figures, this block would be more determined thereto, and Hercules would be in it as in some sense innate, although it would be needful to labor to discover these veins, to clear them by polishing, and by cutting away what prevents them from ap pearing. Thus it is that ideas and truths are for us innate, as inclinations, dispositions, habits, or natural potentialities, and not as actions; although these potentialities are always accom panied by some actions, often insensible, which correspond to them.

It seems that our clever author claims that there is nothing *virtual* in us, and indeed nothing of which we are not alway actually conscious; but he cannot take this rigorously, other wise his opinion would be too paradoxical; since, moreover acquired habits and the stores of our memory are not alway perceived and do not even always come to our aid at need although we often easily recall them to the mind upon som slight occasion which makes us remember them, just as w need only the beginning of a song to remember it.[1] He limit his thesis also in other places, by saying that there is nothin in us of which we have not at least formerly been conscious But besides the fact that no one can be assured by reaso alone how far our past *apperceptions*, which we may have fo gotten, may have gone, especially according to the Platoni doctrine of reminiscence which, wholly fabulous as it is, is i no respect incompatible at least in part with reason wholl pure: besides this, I say, why must we acquire all throug the perception of external things, and nothing be unearthed i ourselves? Is our soul then by itself such a blank that beside the images borrowed from without, it is nothing? This is no an opinion (I am sure) that our judicious author could approv

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[1] Erdmann and Jacques read: "le commencement d'une chanson pour no faire ressouvenir du reste," *i.e.* the beginning of a song to remind us of tl rest. — Tr.

And where do we find tablets that have no variety in themselves? For we never see a plane perfectly even and uniform. Why, then, could we not furnish also ourselves with something of thought from our own depths if we should dig therein? Thus I am led to believe that at bottom his opinion upon this point is not different from mine, or rather from the common view, inasmuch as he recognizes two sources of our knowledge, the Senses and Reflection.

I do not know whether it will be so easy to harmonize him with us and with the Cartesians, when he maintains that the mind does not always think, and particularly that it is without perception when we sleep without dreaming; and he objects[1] that since bodies can exist without motion, souls can also exist without thought. But here I make a somewhat different reply than is customary, for I hold that naturally a substance cannot exist without action, and that there is indeed never a body without movement. Experience already favors me, and you have only to consult the book of the distinguished Mr. Boyle against absolute rest, to be convinced of it; but I believe reason favors it also, and this is one of the proofs I have for doing away with atoms.

Moreover, there are a thousand indications which make us think that there are at every moment an infinite number of *perceptions* in us, but without apperception and reflection, *i.e.* changes in the soul itself of which we are not conscious, because the impressions are either too slight and too great in number, or too even, so that they have nothing sufficiently distinguishing them from each other; but joined to others, hey do not fail to produce their effect and to make themselves elt at least confusedly in the mass. Thus it is that habit makes us take no notice of the motion of a mill or a waterfall when we have lived quite near it for some time. It is not hat the motion does not always strike our organs, and that omething no longer enters into the soul corresponding hereto, in virtue of the harmony of the soul and the body, ut these impressions which are in the soul and the body, be-ng destitute of the attractions of novelty, are not strong nough to attract our attention and our memory, attached to bjects more engrossing. For all attention requires memory,

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[1] Erdmann and Jacques read: "Il dit que," *i.e.* He says that. — Tr.

and often when we are not admonished, so to speak, and
warned to take note of some of our own present perceptions
we allow them to pass without reflection, and even withou
being noticed; but if any one directs our attention to them
immediately after, and makes us notice, for example, some
noise which was just heard, we remember it, and are consciou
of having had at the time some feeling of it. Thus ther
were perceptions of which we were not conscious at once, consciousness arising in this case only from the warning afte
some interval, however small it may be. And to judge stil
better of the minute perceptions which we cannot distinguis
in the crowd, I am wont to make use of the example of th
roar or noise of the sea which strikes one when on its shor
To understand this noise as it is made, it would be necessar
to hear the parts which compose this whole, *i.e.* the noise o
each wave, although each of these little noises makes itsel
known only in the confused collection of all the others, *i.e.* i
the roar itself, and would not be noticed if the wave whic
makes it were alone. For it must be that we are affected
little by the motion of this wave, and that we have some pe
ception of each one of these noises, small as they are; othe
wise we would not have that of a hundred thousand wave
since a hundred thousand nothings cannot make somethin
One never sleeps so soundly as not to have some feeble an
confused sensation, and one would never be awakened by th
greatest noise in the world if he did not have some perceptio
of its small beginning; just as one would never break a ro
by the greatest effort in the world if it were not stretche
and lengthened a little by smaller efforts, although the slig
extension they produce is not apparent.

These minute perceptions are, then, of greater efficacy
their results than one supposes. They form I know not wh
these tastes, these images of the sense-qualities, clear in t
mass, but confused in the parts, these impressions which s
rounding bodies make upon us, which involve the infinite, t
connection which each being has with all the rest of the u
verse. We may even say that in consequence of these min
perceptions, the present is big with the future and laden w
the past, that all things conspire (*σύμπνοια πάντα*, as Hi
pocrates said), and that in the least of substances eyes

penetrating as those of God could read the whole course of the things in the universe.

> Quæ sint, quæ fuerint, quæ mox futura trahantur.[1]

These insensible perceptions indicate also and constitute the same individual who is characterized by the traces or expressions which they conserve of preceding states of this individual, in making the connection with his present state; and they can be known by a superior mind, even if this individual himself should not be aware of them, *i.e.* when there would no longer be in him the express recollection of them. But they (these perceptions, I say) furnish, indeed, the means of finding again this recollection at need by the periodic developments which may some day happen. It is for this reason that death can be only a sleep, and cannot, indeed, continue, the perceptions ceasing merely to be sufficiently distinguished, and being reduced in the animals to a state of confusion which suspends consciousness, but which cannot last always; not to speak[2] here of man, who must have in this regard great privileges in order to preserve his personality.

It is also by means of the insensible perceptions that this admirable pre-established harmony of the soul and the body, and indeed of all the monads or simple substances, is explained;[3] which supplies the place of the unmaintainable influence of one upon the others, and which in the judgment of the author of the most excellent of dictionaries exalts the grandeur of the divine perceptions beyond what has ever been conceived. After this I would add little if I should say that t is these minute perceptions which *determine* us in many unctures without being thought of, and which deceive the vulgar by the appearance of an *indifference of equilibrium*, as f we were entirely indifferent whether we turned (for example) to the right or to the left. It is not needful also that notice here, as I have done in the book itself, that they ause that *uneasiness* which I show to consist in something which differs from pain only as the small from the great, and which, however, often constitutes our desire and even our pleasure by giving to it an exciting flavor. It is also[1] the insensible parts of our sensible perceptions, which produce a relation between the perceptions of colors, heat, and other sensible qualities, and between the motions in bodies which correspond to them; while the Cartesians together with our author, penetrating as he is, conceive the perceptions which we have of these qualities as arbitrary, *i.e.* as if God had given them to the soul according to his good pleasure without any regard to any essential relation between these perceptions and their objects: a view which surprises me and which appears to me little worthy of the wisdom of the Author of things, who does nothing without harmony and without reason.

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[1] Erdmann reads: *quæ* mox, etc.; Jacques: *quæ* mox *ventura* trahantur. Gerhardt's reading: "que" is evidently an error. — Tr.

[2] Erdmann and Jacques omit: "pour ne parler icy de l'homme qui doit voir en cela des grands privileges pour garder sa personalité." — Tr.

[3] Erdmann and Jacques read "j'explique," I explain. — Tr.

In a word, *the insensible perceptions* are as eminently useful in Pneumatology[2] as are the insensible corpuscles in Physics, and it is equally unreasonable to reject the one o the other under the pretext that they are out of reach of ou senses. Nothing is accomplished all at once, and it is one o my great maxims, and one of the most verified, that *natur makes no leaps:* a maxim which I called the *Law of Continuity* when I spoke of it in the first "Nouvelles de la Républiqu des Lettres,"[3] and the use of this law is very considerable i Physics. This law declares that we pass always from the smal to the great, and the reverse, through the medium, in degree a in parts, and that motion never springs immediately from rest nor is reduced thereto save by a smaller motion, as one neve completes the survey of any line or length until he has completed a smaller line, although hitherto those who have se forth the laws of motion have not observed this law, believin that a body can receive in a moment a motion contrary to th preceding. And all this makes one indeed think that th

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[1] Erdmann and Jacques read: "Ce sont les mêmes parties insensibles," etc It is the same insensible parts, etc. — Tr.

[2] *I.e.* Psychology. *Cf.* Hamilton's Reid, 8th ed., Vol. I., p. 217 a, and not — Tr.

[3] A literary journal published by Pierre Bayle at Amsterdam, 1684–168 afterwards continued, at Bayle's request, by Basnage, under the title "Histoi de ouvrages des Savants," 1687–1709. Leibnitz published in this journal July, 1698, his *Eclaircissement des difficultés que M. Bayle a trouvées dans système nouveau de l'union de l'âme et du corps.* Gerhardt, Vol. 4, pp. 51 524; Erdmann, pp. 150–154; Jacques, Vol. 1, pp. 481–487. Translation, Appe dix, pp. 706–712. — Tr.

noticeable perceptions also arise by degrees from those which are too minute to be observed. To think otherwise, is to have little knowledge of the immense subtilty of things which always and everywhere surrounds an actual infinite. / Jnd

I have also noticed that in virtue of these insensible variations, two individual things cannot be perfectly alike, and that they must always differ more than *numero:* a fact which destroys the blank tablets of the soul, a soul without thought, a substance without action, a vacuum in space, atoms and even particles not actually divided in matter, absolute rest, entire uniformity in one portion of time, place, or matter, perfect globes of the second element, born of cubes perfect and original, and a thousand other fictions of philosophers which arise from their incomplete notions, and which the nature of things does not allow, and which our ignorance and the little attention we give to the insensible let pass, but which cannot be made tolerable unless they are limited to the abstractions of the mind which protests that it does not deny what it puts aside, and thinks should not enter into any present consideration. Otherwise if it were very well understood, viz.: that things of which we are not conscious are neither in the soul nor the body, we should be lacking in philosophy as in politics, in neglecting τὸ μικρόν, the insensible progressions, while an abstraction is not an error, provided we know what it is that we feign therein. Just as the mathematicians employ it when they speak of the perfect lines which they propose to us, of uniform motions and of other regulated effects, although *matter* (*i.e.* the medley of the effects of the surrounding infinite) always makes some exception. It is for the sake of distinguishing the considerations and of reducing so far as we may do so the effects to reasons, and of foreseeing some of their consequences, that we proceed thus. For the more we are careful to neglect no consideration that we can regulate, the more practice corresponds to theory. But it belongs only to the supreme Reason, whom nothing escapes, distinctly to comprehend all the infinite and to see all the reasons and all the consequences. All that we can do in regard to infinites is to know them confusedly, and to know at least distinctly that they are such; otherwise we judge very wrongly of the beauty and the grandeur of the universe; so also we could not have a sound Physics explaining the nature of bodies in general, and still less a proper Pneumatology comprising the knowledge of God, of souls, and of simple substances in general.

This knowledge of insensible perceptions serves also to explain why and how two souls, human or otherwise,[1] of one and the same species never come forth perfectly alike from the hands of the Creator and have always each its original relation to the points of view which it will have in the universe. But this it is which already follows from the remarks I have made about two individuals, viz.: that their *difference* is always *more than numerical.* There is, moreover, another point of importance, in respect to which I am obliged to deviate not only from the opinions of our author, but also from those of the majority of modern philosophers: I believe with the majority of the ancients that all genii,[2] all souls, all simple created substances, are always joined to a body, and that there are never souls entirely separated. I have *a priori* reasons for my view; but the doctrine will be found to have this advantage, that it resolves all the philosophical difficulties as to the condition of souls, their perpetual conservation, their immortality, and their operation. The difference between one of their states and another, never being and never having been other than that of more sensible to less sensible, of more perfect to less perfect, or the reverse, this doctrine renders their past or future state as explicable as that of the present One feels sufficiently, however little reflection he makes, that this is rational, and that a leap from one state to another infinitely different could not be natural. I am astonished that by leaving the natural without reason, the schoolmen have been willing purposely to plunge themselves into very great difficulties, and to supply matter for apparent triumphs of the strong-minded, all of whose reasons fall at once by this explanation of things, in which there is no more difficulty in conceiving the conservation of souls (or rather, according to my view, of the animal) than there is in conceiving the chang of the caterpillar into the butterfly, and the conservation o thought in sleep, to which Jesus Christ has divinely well compared death. I have already said also that sleep could no last always, and it will last least or almost not at all in the case of rational souls who are always destined to preserve the personality which has been given them in the City of God, and consequently remembrance: and this in order to be more susceptible of chastisements and recompenses. And I add further that in general no derangement of the visible organs is capable of throwing things into entire confusion in the animal or of destroying all the organs and depriving the soul of all its organic body and of the ineffaceable remains of all preceding traces. But the ease with which the ancient doctrine of subtile bodies connected with the angels (which was confounded with the corporeality of the angels themselves) has been abandoned, and the introduction of pretended separate intelligences in creatures (to which those who make the heavens of Aristotle revolve have contributed much), and finally the poorly understood view into which we have fallen, that the souls of brutes could not be preserved without falling into metempsychosis, and[1] without conducting them from body to body, and the perplexity into which men have fallen by their ignorance of what to do with them, have caused us, in my opinion, to neglect the natural explanation of the conservation of the soul. This has done much harm to natural religion, and has caused many to believe that our immortality was only a miraculous grace of God, of which also our celebrated author speaks with some hesitation, as I shall presently remark. But it would be well had all those who are of this opinion spoken as wisely and in as good faith as he, for it is to be feared that many who speak of immortality as a grace do so only to keep up appearances, and resemble at bottom these Averroists and some bad Quietists who picture to themselves an absorption and the reunion of the soul with the ocean of divinity: a notion whose impossibility my system alone perhaps evinces.

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[1] Erdmann reads: "ou deux choses," or two things. — Tr.

[2] *I.e.* Angels and archangels. — Tr.

It seems also that we differ further in regard to matter, in that the author thinks that a vacuum is necessary to motion, because he thinks that the minute parts of matter are rigid. And I admit that if matter were composed of such parts, motion in a *plenum* would be impossible, as if a room were full of a quantity of little pebbles without there being the least empty space. But this supposition, for which there appears also to be no reason, is not admissible, although this learned author goes as far as to believe that rigidity or cohesion of the minute parts makes the essence of the body. It is necessary rather to conceive space as full of a matter originally fluid, susceptible of all the divisions, and even actually subject to divisions and subdivisions to infinity, but with this difference, however, that it is divisible and divided unequally in different parts on account of the motions which more or less concur there. This it is which causes matter to have everywhere a degree of rigidity as well as of fluidity, and no body to be hard or fluid in the highest degree, *i.e.* no atom to be found of an insurmountable hardness nor any mas entirely indifferent to division. The order, also, of nature, and particularly the law of continuity, destroy equally the one and the other.

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[1] Gerhardt's text is: "et sans les promener de corps en corps, et l'embaras où l'on a esté en ne sachant ce qu'on en devoit faire." Erdmann and Jacques omit the clause. — Tr.

I have also shown that *cohesion*, which by itself would no be the effect of impulse or of motion, would cause a *traction* taken strictly. For if there were a body originally rigid, — fo example, an Epicurean atom, — which should have a part projecting like a hook (since we can imagine atoms of all sorts o shapes), this hook pushed would draw with it the rest of thi atom; *i.e.* the part which is not pushed, and which does no fall in the line of the impulsion. Our learned author, however, is for himself opposed to these philosophic tractions such as were formerly attributed to the abhorrence of vacuum, and he reduces them to *impulsions*, maintaining wit the moderns that one part of matter works immediately upo another only by pushing it by contact, in which I think the are right, because otherwise there is nothing intelligible in th operation.

I must not, however, conceal the fact that I have noticed sort of retraction by our excellent author on this subjec whose modest sincerity I cannot forbear praising in th respect as much as I have admired on other occasions h penetrating genius. It is in his reply to the second letter the late Bishop of Worcester,[1] printed in 1699, p. 408, wher in order to justify the view which he had maintained against this wise prelate, viz.: that matter might think, he says among other things: "*I admit that I said* (Essay on Understanding, Book II. chap. 8, § 11) *that body acts by impulse and not otherwise. This also was my view when I wrote it, and even now I cannot conceive its action in any other way. But since then I have been convinced by the judicious Mr. Newton's incomparable book that there is too much presumption in wishing to limit the power of God by our limited conceptions. The gravitation of matter towards matter in ways inconceivable to me, is not only a demonstration that God, when it seems to him good, can put into bodies powers and modes of acting which are beyond what can be derived from our idea of body or explained by what we know of matter; but it is furthermore an incontestable instance that he has really done so. I shall therefore take care to correct this passage in the next edition of my book.*"[1] I find that in the French version of this book, made undoubtedly from the latest editions, the matter has been put thus in this § 11: *It is evident,* at least so far as we can conceive it, *that it is by impulse and not otherwise that bodies act on each other; for it is impossible for us to understand how the body can act upon what it does not touch, which is the same as to imagine that it can act where it is not.*

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[1] Edward Stillingfleet, 1635–1699: Bishop of Worcester, 1689–1699. — Tr.

I can only praise this modest piety of our celebrated author, who recognizes that God can do more than we can understand, nd that thus there may be inconceivable mysteries in the rticles of faith; but I should not wish to be obliged to recur o the miracle in the ordinary course of nature and to admit owers and operations absolutely inexplicable. Otherwise too nuch license will be given poor philosophers, under cover of vhat God can do, and by admitting these *centripetal virtues* or hese *immediate attractions* from afar without being able to nake them intelligible, I see nothing to hinder our Scholastics rom saying that everything is done simply by their faculties nd from maintaining their intentional species which proceed from objects even to us and find means of entering even into our souls. If that is so,

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[1] I have retranslated the passage from the French version, as given by Ger- ardt. For the original, *cf.* Locke, *Philos. Works* (Bohn's ed.), Vol. II., p. 395. he entire letter is found in Locke's Works, Vol. I., pp. 578–774; this particu- r passage, p. 754. Edition of 4 vols., 4to. 7th ed., 1768. Printed for H. Wood- ll, A. Millar, and others. — TR.

> Omnia jam fient, fieri quæ posse negabam.

So that it seems to me that our author, quite judicious as he is, goes here a little too much from one extreme to the other. He makes a difficulty in regard to the operations of *souls* when the question is only of admitting what is not *sensible,* and behold he gives to *bodies* what is not even *intelligible;* granting them powers and actions which surpass in my view all that a created spirit can do and understand, since he grants them attraction, and that even at great distances without limiting them to any sphere of activity, and this in order to maintain a view which does not appear less inexplicable, viz.: the possibility of the thought of matter in the natural order.

The question which he discusses with the celebrated Prelate who attacked him, is, *whether matter can think,* and as it is an important point even for the present work, I cannot refrain from entering upon it a little and from taking note of thei controversy. I will give the substance of their discussio upon this subject, and take the liberty of saying what I thin of it. The late Bishop of Worcester, fearing (but in m opinion without good reason) lest our author's doctrine of idea might be liable to certain abuses prejudicial to the Christia faith, undertook to examine some points in it in his "Vindicatio of the Doctrine of the Trinity";[1] and having rendered justic to this excellent writer, by recognizing that he thinks the exist ence of spirit as certain as that of body, although one of thes substances is as little known as the other, he asks (p. 241 *sq.* how reflection can assure us of the existence of spirit, if Go can give to matter the power of thought according to the vie of our author, Book IV., chap. 3, since thus the way of idea which must serve to discern[2] what may suit the soul or th body, would become useless; while he had said in Book II. o the Essay on Understanding, chap. 23, §§ 15, 27, 28, that th operations of the soul furnish us the idea of mind and th understanding, and the will renders this idea as intelligible to us as the nature of body is rendered intelligible to us by solidity and impulse. This is how our author replies in his first letter (p. 65 *sq.*): "*I believe I have proved that there is a spiritual substance in us, for we experience in ourselves thought. Now this action or this mode cannot be the object of the idea of a thing subsisting by itself, and consequently this mode needs a support, a subject, in which it may inhere, and the idea of this support forms what we call substance. . . .* For since the general idea of substance is everywhere the same, *it follows that the modification, which is called thought or power of thinking, being joined to it, there results a mind without the necessity of considering what other modification it has besides; i.e. whether it has solidity or not. And, on the other hand, the substance which has the modification called solidity will be matter, whether thought is joined to it or not. But if by a spiritual substance you mean an immaterial substance, I admit that I have not proved that there is one in us, and that it cannot be demonstrably proved on my principles. Although what I have said on the systems of matter* (Book IV., chap. 10, § 16) *in proving that God is immaterial, renders it in the highest degree probable, that the substance which thinks in us is immaterial. . . . However, I have shown* [the author adds, p. 68] *that the great ends of religion and of morals are assured by the immortality of the soul, without the need of supposing its immateriality.*"[1]

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[1] Published in the autumn of 1696. *Cf.* Alexander Campbell Fraser, *Lock* pp. 245–246 (Philosophical Classics), Edinburgh: Wm. Blackwood and Son 1890. — Tr.

[2] Gerhardt reads: "discerner"; Erdmann and Jacques: "discuter," discuss, debate, argue. — Tr.

The learned Bishop in his reply to this letter, in order to make it evident that our author held another view, when he wrote the second book of the Essay, quotes, p. 51, this passage (taken from the same book, chap. 23, § 15), where it is said, *that by the simple ideas which we have deduced from the operations of our mind, we can form the complex idea of a mind. And that putting together the ideas of thought, of perception, of liberty, and of power to move our body, we have as clear a notion of immaterial substances as of material.* He quotes still other passages to show that the author opposes mind to body. And he says (p. 54) that the ends of religion and of morals are the better assured by proving that the soul is immortal by its nature, *i.e.* immaterial. He quotes also (p. 70) this passage, *that the ideas we have of particular and distinct kinds of substances are nothing else than different combinations of simple ideas;*[1] and that thus the author believed that the idea of thinking and of willing gave another substance different from that which the idea of solidity and of impulse gives, and that (§ 17) he remarks that these ideas constitute the body as opposed to mind.

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[1] I have retranslated the passage from the French version as given by Gerhardt. For the original, *cf.* Locke, *Philos. Works* (Bohn's ed.), Vol. II., p. 387. The entire letter is found in Locke's Works, Vol. I., pp. 458–517; this particular passage, p. 477. Edition of 4 vols., 4to. 7th ed., 1768. Printed for H. Woodfall, A. Millar, and others. — Tr.

The Bishop of Worcester might add that from the fact that the *general idea* of substance is in the body and in the mind, it does not follow that their *differences* are *modifications* of one and the same thing, as our author has just said in the part of his first letter which I have quoted. It is necessary carefully to distinguish between modifications and attributes. The faculties of having perception and of acting, extension, solidity, are attributes or perpetual and principal predicates; but thought, impetuosity, figures, movements, are modifications of these attributes. Furthermore, we must distinguish between *physical* (or, rather, real) *genus* and *logical* or ideal *genus.* Things which are of the same physical genus, or which are *homogeneous,* are of the same *matter,* so to speak, and may often be changed the one into the other by the change of modification, as circles and squares. But two *heterogeneous* things may have a common logical genus, and then their *differences* are not simple accidental modifications of one and the same subject, or of one and the same metaphysical or physical matter. Thus time and space are very heterogeneous things, and we should do wrong to imagine I know not what real common subject which had only the continuous quantity in general and whose modifications should cause the rise of time and space.[2] Some one will perhaps laugh at these distinctions of the philosophers of two genera, the one merely logical, the other real; and of two matters, the one physical, viz.: that of bodies, the other metaphysical only or general; as if some one said that two parts of space are of one and the same matter or that two hours are likewise among themselves of one and he same matter. Nevertheless, these distinctions are not distinctions of terms merely, but of things themselves, and seem o come in here very opportunely, where their confusion has iven rise to a false conclusion. These two genera have a ommon notion, and that of the real genus is common to the wo matters, so that their genealogy will be as follows: —

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[1] Locke, *Philos. Works* (Bohn's ed.), Vol. 1, p. 426, chap. 23, § 6.—Tr.

[2] Erdmann and Jacques add: "Cependant leur genre logique commun est l quantité continuë," *i.e.* Nevertheless their common logical genus is the con tinuous quantity.—Tr.

enus
- *Logical* merely, varied by simple *differences*.
- *Real*, whose *differences* are *modifications*, i.e. *Matter*.
  - *Metaphysical* only, where there is homogeneity.
  - *Physical*, where there is a solid homogeneous mass. -plenum

I have not seen the second letter of the author to the ishop, and the reply which this prelate makes to it scarcely ouches the point relating to the thinking of matter. But the eply of our author to this second answer returns to it. *God* says he, nearly in these words, p. 397) *adds to the essence of atter the qualities and perfections which please him, simple ovement in some parts, but in plants, vegetation, and in anials, sentiency. Those who agree up to this point, cry out as oon as we go a step farther, and say that God can give to matter hought, reason, will, as if this destroyed the essence of matter. ut to prove it, they allege that thought or reason is not included n the essence of matter, a point of no consequence, since moveent and life are not included therein either. They assert, also, hat we cannot conceive of matter as thinking; but our conception s not the measure of God's power.*[1] After this he cites the exmple of the attraction of matter (p. 99, but especially p. 408), here he speaks of the gravitation of matter towards matter, ttributed to Mr. Newton (in the terms which I have quoted bove), admitting that we can never conceive the manner of it. his is in reality to return to the occult, or, what is more, inxplicable qualities. He adds (p. 401) that nothing is more lculated to favor the sceptics than to deny what we do not nderstand; and (p. 402) that we do not conceive even how the ul thinks. He will have it (p. 403) that, since the two substances, material and immaterial, are capable of being conceived in their naked essence without any activity, it depends upon God to give to each the power of thought. And he wishes to take advantage of the admission of his opponent, who had granted sentiency to the brutes, but who would not grant them any immaterial substance. He claims that liberty, consciousness (p. 408), and the power of abstract thought (p. 409) can be bestowed upon matter, not as matter, but as enriched by a divine power. Finally, he quotes (p. 434) the remark of a traveller as eminent and judicious as M. de la Loubère,[1] that the pagans of the East acknowledge the immortality of the soul without being able to comprehend its immateriality.

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[1] For the original, *cf.* Locke, *Philos. Works* (Bohn's ed.), Vol. 2, pp. 390, 391. he entire letter is found in Locke's Works, Vol. 1, pp. 578–774; this particur passage, pp. 749, 750. Edition of 4 vols., 4to. 7th ed., 1768. Printed for Woodfall, A. Miller, and others. — Tr.

On all this I would remark, before coming to the explana
tion of my view, that it is certain that matter is as little capa
ble of mechanically producing feeling, as of producing reason
as our author admits; that in truth I acknowledge that it i
not permissible to deny what we do not understand, but I ad
that we are right in denying (at least in the natural order
what is absolutely neither intelligible nor explicable. I main
tain, also, that substances (material or immaterial) cannot b
conceived in their naked essence without any activity; tha
activity belongs to the essence of substance in general; that
finally, the conception of creatures is not the measure of God'
power, but that their conceptivity, or power of conception, i
the measure of nature's power; all this is in harmony wit
the natural order, being capable of being conceived or unde
stood by some creature.

Those who understand my system will think that I cann
wholly agree with the one or the other of these two excellen
authors, whose discussion, however, is very instructive. Bu
to explain myself distinctly, it is necessary before all thing
to consider that the modifications which may belong naturall
or without miracle to a subject must come to it from the lim
tations or variations of a real genus, or of a constant and abs
lute original nature. For it is thus that Philosophers di

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[1] La Loubère, Simon de, 1642–1729. Sent by Louis XIV. in 1687 to Sia
to establish diplomatic and commercial relations between that kingdom a
France. While there he collected a large amount of exact and interesti
information concerning the country, its history, customs, religion, etc., whi
on his return, he published in his *Du royaume de Siam*, Paris, 1691; Engli
translation, London, 1693. — Tr.

tinguish the modes of an absolute being from that being itself; as it is known that size, figure, and movement are manifestly limitations and variations of corporeal nature. For it is clear how a limited extension gives figures, and that the change which is made in it is nothing but motion. And whenever we find any quality in a subject, we must believe that if we understood the nature of this subject and of this quality, we should conceive how this quality can result therefrom. Thus in the order of nature (miracles aside) it is not optional with God to give to substances indifferently such or such qualities, and he will never give to them any, save those which will be natural to them, *i.e.* which can be derived from their nature as explicable modifications. Thus it may be asserted that matter will not naturally possess the attraction mentioned above, and will not proceed of itself in a curved line, because it is impossible to conceive how this takes place there, *i.e.* to explain it mechanically, while that which is natural must be capable of becoming distinctly conceivable if we were admitted into the secrets of things. This distinction between what is natural and explicable and what is inexplicable and miraculous removes all the difficulties, and by rejecting it, we should maintain something worse than the occult qualities; and in so doing would renounce philosophy and reason, by opening retreats for ignorance and idleness, though a dead system, which admits not only that there are qualities which we do not understand, of which there are only too many, but also that there are some which the greatest mind, if God gave him every possible opening, could not comprehend, *i.e.* which would be either miraculous or without rhyme and reason; and also that God should work miracles ordinarily would be without rhyme and reason, so that this hypothesis would destroy equally our philosophy which seeks reasons, and the divine wisdom which furnishes them.

Now as to thought, it is certain, and the author admits it more than once, that it could not be an intelligible modification of nature or one which could be comprised therein and xplained, *i.e.* that a being who feels and thinks is not a mechnism like a watch or a mill, so that we might conceive sizes, gures, and movements, whose mechanical conjunction might roduce something thinking, and even feeling in a mass in which there was nothing of the kind, which would cease also in the same manner upon the derangement of this mechanism. It is not then a natural thing for matter to feel and think, and this can happen within it only in two ways, of which one will be that God should unite with it a substance to which thought is natural, and the other that God by a miracle should put thought therein. In this, then, I am wholly of the opinion of the Cartesians, except that I extend it even to the brutes, and that I believe they have sentiency and (properly speaking) immaterial souls, and are as imperishable as the atoms of Democritus or Gassendi, while the Cartesians, perplexed without reason by the souls of brutes, and not knowing what they are to do with them if they are preserved (for want of having thought of the conservation of the same animal reduced to miniature), have been compelled to refuse even sentiency to the animals against all appearances and contrary to the judgment of the human race. But if any one should say that God at least may add the faculty of thinking to the prepared mechanism, I should reply that if this were done, and if God added this faculty to matter without putting therein at the same time a substance which was the subject of inhesion of this same faculty (as I conceive it), *i.e.* without adding thereto an immaterial soul, it would be necessary that matter should be miraculously exalted in order to receive a power of which it i naturally incapable; as some scholastics[1] claim that God exalts fire even to the point of giving it the force to burn immediately spirits separated from matter, a thing which would b a miracle, pure and simple. And it is enough that it canno be maintained that matter thinks without putting into it a imperishable soul, or a miracle, and that thus the immortalit of our souls follows from what is natural, since their extinction can be maintained only by a miracle, whether by exaltin matter or by annihilating the soul. For we know well tha God's power can make our souls mortal, wholly immateria (or immortal by nature alone) as they may be, since he ca annihilate them.

Now this truth of the immateriality of the soul is undoub

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[1] Erdmann and Jacques read: "Quelques scholastiques ont prétendu quelq chose d'approchant savoir," *i.e.* Some scholastics have claimed somethi like this: viz. — Tr.

edly of importance. For it is infinitely more advantageous to
religion and morality, especially in our times (when many
eople hardly respect revelation alone and miracles[1]), to show
hat souls are immortal by nature, — and that it would be a mir-
cle if they were not, — than to maintain that our souls ought
aturally to die, but that it is in virtue of a miraculous grace
rounded in the promise of God alone that they do not die.
lso for a long time it has been known that those who have
esired to destroy natural religion and to reduce all to revealed
eligion, as if reason taught us nothing regarding it, have been
ooked upon with suspicion; and not always without reason.
ut our author does not belong to that number. He maintains
he demonstration of the existence of God, and he attributes
o the immateriality of the soul a *probability in the highest de-*
ree, which could consequently pass for a *moral certainty,* so
hat I think that, having as much sincerity as penetration, he
ould easily accommodate himself to the doctrine which I have
st set forth, and which is fundamental in every rational phi-
sophy. For otherwise I do not see how one can prevent him-
lf from falling back into the *fanatical philosophy,*[2] such as the
Philosophia Mosaica" of Fludd,[3] which saves all phenomena by
tributing them to God immediately and by miracle; or into
e *barbaric* philosophy like that of certain philosophers and
hysicians of the past, which still manifested the barbarity of
eir age, and which to-day is with reason despised, who saved
pearances by forging purposely occult qualities or faculties
hich they imagined to be like little demons or goblins capa-
e of producing without ceremony what is demanded, just as
watches marked the hours by a certain horodeictic faculty
ithout needing wheels, or as if mills ground the grain by a
active faculty without needing anything resembling mill-
ones. As to the difficulty that many people have had in
nceiving an immaterial substance, it will easily cease (at
ast in good part) if they will not demand substances sepa-
ted from matter, as in fact I do not believe there ever are any
turally among creatures.

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[1] Erdmann and Jacques omit this clause. — Tr.

[2] Erdmann and Jacques read: "la philosophie ou fanatique," *i.e.* philosophy
fanaticism. — Tr.

[3] Robert Fludd (1574–1637), an English physician and mystical philosopher.
e *Philosophia Mosaica* was published at Gouda in 1638. — Tr.

NEW ESSAYS ON HUMAN UNDERSTANDIN

Book I. — Innate Ideas

CHAPTER I[1]

ARE THERE INNATE PRINCIPLES IN THE MIND OF MAN?

Philalethes. Having recrossed the sea after finishing m business in England, I thought at once of paying you a visi sir, in order to cultivate our former friendship, and to co verse upon matters which lie close to our hearts, and upo which I believe I have acquired some new light during m long stay in London. When we were living formerly quit near each other at Amsterdam, we both took much pleasu in making researches into the principles and means of pen trating into the heart of things. Although our opinions ofte differed, this diversity increased our satisfaction, when, in o conference together, notwithstanding the contrariety whic sometimes existed, there mingled nothing disagreeable. Y were for Descartes[2] and for the opinions of the celebrate author[2] of "The Search after Truth," and I found the opinio of Gassendi,[2] cleared up by Bernier, easier and more natura Now I feel myself greatly strengthened by the excellent wo which an illustrious Englishman, with whom I have the hon of a particular acquaintance, has since published, and whi has several times been reprinted in England, under the mode itle of "An Essay concerning Human Understanding." And I am delighted that it has appeared lately in Latin and in French, in order that it may be more generally useful. I have greatly profited by the reading of this work, and indeed from the conversation of the author, with whom I have talked often in London, and sometimes at Oates, at the house of my Lady Masham,[1] worthy daughter of the celebrated Cudworth,[2] a great English philosopher and theologian, author of the ntellectual System, from whom she has inherited the spirit of meditation and the love for good learning, which appeared particularly in the friendship which she kept up with the uthor of the Essay. And, as he had been attacked by some lever Doctors, I took pleasure in reading also the defence which a very wise and very intelligent young lady made for im, besides those which he made for himself. This author writes in the spirit of the system of Gassendi, which is at ottom that of Democritus;[2] he is for the vacuum and for toms; he believes that matter might think; that there are o innate ideas, that our mind is a *tabula rasa*, and that we do ot always think; and he appears disposed to approve the most of the objections which Gassendi has made[3] to Descartes. He has enriched and strengthened this system by a thousand eautiful reflections; and I do not at all doubt that now our arty will triumph boldly over its adversaries, the Peripatetics and the Cartesians. This is why, if you have not yet read this book, I invite you to do so, and if you have read it, I ask you to give me your opinion of it.

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[1] Book I. of Locke's Essay has four chapters, of which chap. 1 is introdu tory. Chap. 1 of Leibnitz corresponds to chap. 2 of Locke. — Tr.

[2] René Descartes, 1596–1650; Nicolas Malebranche, 1638–1715, his ch work, *De la Recherche de la Vérité*, 1674; Pierre Gassendi, 1592–1655, *Abré de la Philosophie de Gassendi*, 8 vols., 1678, 2d ed., 7 vols., 1684, by Franç Bernier. — Tr.

Theophilus. I rejoice to see you, on your return after a long bsence, happy in the conclusion of your important business, ull of health, steadfast in your friendship for me, and always ansported with an ardor equal to the search for the most important truths. I no less have continued my meditation in the same spirit, and I believe I have profited as much as and, not to flatter myself, perhaps more than yourself. Indeed, my need therein was greater than yours, for you wer more advanced than I. You were more conversant with speculative philosophers, and I was more inclined towards ethics But I have learned more and more how ethics receives strengt from the solid principles of true philosophy; therefore I hav lately studied these principles more diligently, and have begu meditations quite new. So that we shall have the means o giving ourselves a reciprocal pleasure of long duration in communicating the one to the other our solutions. But it is necessary for me to tell you, as a piece of news, that I am n longer a Cartesian, and that, nevertheless, I am farther removed than ever from your Gassendi, whose knowledge an merit I, for the rest, recognize. I have been impressed wit a new system, of which I have read something in the "Jou naux des Savans" of Paris, Leipzig, and Holland, and in th marvellous Dictionary of Bayle, article "Rorarius"[1]; and sinc then I believe I see a new aspect of the interior of thing This system appears to unite Plato[2] and Democritus, Aristotl and Descartes, the scholastics with the moderns, theology an ethics with the reason. It seems to take the best from a sides, and then it goes much farther than any has y gone. I find in it an intelligible explanation of the union soul and body, of which I had before this despaired. I fin the true principles of things in the Unities of Substance, whic this system introduces, and in their harmony pre-establishe by the primitive Substance. I find therein a wonderful si plicity and uniformity, so that it may be said that this su stance is everywhere and always the same thing, differi only in degrees of perfection. I see now what Plato mea when he assumed matter to be an existence imperfect a transitory; what Aristotle meant by his Entelechy; what th promise of another life is which Democritus himself ma according to Pliny; how far the Sceptics were right in c claiming against the senses; how animals are in fact automa according to Descartes, and how they have, nevertheless, souls and feeling according to the opinion of mankind; how it is necessary to explain rationally those who have lodged life and perception in all things, as Cardan,[1] Campanella,[1] and, better than they, the late Countess of Connaway, a Platonist, and our friend, the late M. François Mercure van Helmont[2] (although elsewhere bristling with unintelligible paradoxes), with his friend, the late Mr. Henry More.[2] How the laws of nature (a good part of which were unknown before this system) have their origin in principles superior to matter, and how, nevertheless, everything takes place mechanically in matter, in which respect the spiritualizing authors I just named have failed with their Archæi,[3] and even the Cartesians, in believ-

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[1] The correspondence between Leibnitz and Lady Masham is given in full Gerhardt, Vol. 3, pp. 331 *sq.* — Tr.

[2] Ralph Cudworth, 1617–1688, his principal work, *The True Intellectual ystem of the Universe*, London, 1678; Democritus, born probably about the ddle of the fifth century B.C., as he says (Diog. L., IX., 41) he was "still ung when Anaxagoras," 500–428 B.C., "was already old (νέος κατὰ πρεσβύτην αξαγόραν)." . . . "The year of his death is unknown," Zeller, *Outlines the History of Greek Philosophy*, pp. 76, 77, New York: H. Holt & Co., 86. — Tr.

[3] In Vol. 3 of his *Opera*, of which two editions were published: by Mont-ort, 1655, 6 vols. folio, Lyons; by Averanius, 1727, also 6 vols. folio. — Tr.

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[1] *Cf.* Gerhardt, Vol. 4, pp. 524–554, the article "Rorarius" with Leibnit remarks. — Tr.

[2] Plato, 427–347 B.C.; Aristotle, 384–322 B.C. — Tr.

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[1] Girolamo Cardano, 1501–1576; Tommaso Campanella, 1568–1639; *cf.* Erdmann, *Grundriss d. Gesch. d. Philos.*, 3d ed., Vol. 1, §§ 242, 246, Berlin: Wilhelm Hertz, 1878, and the English translation of the same, London: Swan Sonnenschein & Co., 1889; also the articles "Cardan" and "Campanella" in the *Encyclopædia Britannica*, 9th ed.—Tr.

[2] Van Helmont, 1618–1698: Henry More, 1614–1687.—Tr.

[3] *Archæus, i.* Modern Latin, from the Greek ἀρχαῖος, ἀρχή, that which is at the beginning, source, origin, a first principle. Littré defines the term thus: "Archée. Terme de physiologie ancienne. Principe immatérial différent de l'âme intelligent et qu'on supposait présider à tous les phénomènes de la vie matérielle." *I.e.* "A term of ancient physiology. An immaterial principle different from the intelligent soul, and which is supposed to preside over all the phenomena of the material life." *The Century Dictionary* gives the following exposition and illustration: "In the philosophy of Paracelsus and other spagyrics, mystics, and theosophists, a spirit or invisible man or animal of ethereal substance, the counterpart of the visible body, within which it resides, and to which it imparts life, strength, and the power of assimilating food. The word is said to have been used by Basil Valentine, a German chemist of the fifteenth century, to denote the solar heat as the source of the life of plants. Paracelsus uses it with the above meaning. It is frequent in the writings of Van Helmont, who explains it as a material pre-existence of the human or animal form *in posse.* He regards the archæus as a fluid, *i.e.* as a semi-material substance like air, and seems to consider it a chemical constituent of the blood. Paracelsus has particularly made use of the hypothesis of the archæus to explain the assimilation of food. This function of the archæus became prominent in medicine. Van Helmont calls it the doorkeeper of the stomach (*janitor stomachi*). There are further divarications of meaning. Also spelled Archeus."

"As for the many pretended intricacies in the instance of the efformation of Wasps out of the Carcase of a Horse, I say, the *Archei* that formed them are no parts of the Horse's Soul that is dead, but several distinct *Archei* that do as naturally joyn with the matter of his body, so putrified and prepared, as the Crowes come to eat his flesh."—Dr. H. More, *Antidote against Atheism*, app. xi.

Cf. Leibnitz: *Considérations sur le Principe de Vie et sur les Natures Plas-*

ing that immaterial substances altered if not the force, at least the direction or determination, of the motions of bodies, whereas the soul and the body retain perfectly each its own laws, according to the new system, and yet one obeys the other as much as is necessary. In fine, it is since I have meditated upon this system that I have found out how the souls of beasts and their sensations are in no sense prejudicial to the immortality of human souls, or, rather, how nothing is more suited to establish our natural immortality than to conceive that all souls are imperishable (*morte carent animæ*), without, however, the fear of metempsychoses, since not only the souls, but further, the animals endure and will endure living, feeling, acting; it is everywhere as here, and always and everywhere as with us, according to what I have already said to you, except that the conditions of animals are more or less perfect and developed, without there ever being a need of souls wholly separate, while we nevertheless have always spirits as pure as possible, notwithstanding our (physical) organs, which cannot disturb by any influence the laws of our (spiritual) spontaneity. I find the vacuum and atoms excluded in quite another way than by the sophism of the Cartesians, grounded in the pretended coincidence of the idea of body and extension. I see all things determined and adorned beyond anything hitherto conceived; matter everywhere organic, no sterile, neglected vacuum, nothing too uniform, everything varied, but with order; and, what passes imagination, the entire universe in epitome, but with a different aspect in each of its parts, and likewise in each of its unities of substance. Besides this new analysis of things, I have a better comprehension of that of notions or ideas, and of truths. I understand what a true, clear, distinct, adequate idea is, if I dare adopt this word. I understand what are primitive truths, and true axioms, the distinction between necessary truths and

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tiques par l'Auteur de l'Harmonie Préétablie, published in the "Histoire des Ouvrages des Savans," May, 1705, Gerhardt, Vol. 6, pp. 539–546; Erdmann pp. 429–432; translation, Duncan, *Philos. Works of Leibnitz*, pp. 163–169. See also Erdmann, *Grundriss d. Gesch. d. Philos.* 3d ed., Vol. 1, § 241, 7, Vol. 2 § 290, 12, or the English translation of the same. Slight additional information may be found in the *Encyclopædia Britannica*, 9th ed., under the article "Medicine," in the part giving an account of Paracelsus and Van Helmont. — Tr.

ruths of fact, between the reasoning of men and the consecu-
ions of animals, which are a shadow of the reasoning of men.
n short, you will be surprised to hear all that I have to say
o you, and, above all, to understand how much the knowledge
f the grandeur and of the perfection of God is therein exalted.
'or I cannot conceal from you, from whom I have had nothing
oncealed, how I have been thrilled now with admiration and
if we may dare to make use of the term) with love for this
overeign source of things and of beauty, having found that
hat this system discovers surpasses everything one has hith-
rto conceived. You know that I had gone a little too far
ormerly, and that I began to lean toward the side of the
pinozists,[1] who allow God only infinite power, without recog-
izing either perfection or wisdom in his case, and regarding
ith contempt the search for final causes, derive everything
rom brute necessity. But these new lights have cured me of
his; and since then I sometimes take the name of *Theophilus*.
have read the book of this celebrated Englishman of whom
ou have just spoken. I value it highly, and I have found in
some good things. But it seems to me necessary to go
uch farther, and necessary even to turn aside from his views,
ince he has adopted some which limit us more than is neces-
ary, and lower a little not only the condition of man, but,
esides, that of the universe.

Ph. You astonish me in fact with all the marvels which
ou have recited to me in a manner a little too favorable for
easy credence of them on my part. However, I will hope
at there will be something solid among so many novelties
ith which you desire to regale me. In this case you will find
e very docile. You know that it was always my disposition
surrender myself to reason, and that I sometimes took the
me of *Philalethes*. This is why, if you please, we will now
ake use of these two names which are so congruous with our
ental constitution and methods. There are means of pro-
eding to the trial, for — since you have read the book of the

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[1] On the relation of Leibnitz to Spinoza, see *Leibniz u. Spinoza*. Ein
itrag zur Entwicklungsgeschichte der Leibnizischen Philosophie. Von Prof.
. Ludwig Stein. Mit neunzehn Ineditis aus dem Nachlass von Leibniz.
rlin: G. Reimer, 1890. pp. xvii., 362. Also "Mind," No. 62, p. 298; No. 63, pp.
sq., the latter an extended note on Stein's book by Prof. George Croom
bertson, the late editor of "Mind." — Tr.

celebrated Englishman, which gives me so much satisfactio and which treats a good part of the subjects of which yo were just speaking, and above all, the analysis of our ideas an knowledge — it will be the shortest way to follow the threa of this work, and to see what you will have to say.

Th. I approve your proposition. Here is the book.

§ 1. *Ph.* [I have read this book so thoroughly that I hav retained even its expressions, which I shall be careful to fo low. Thus I shall not need to recur to the book, except certain junctures where we shall judge it necessary. We sha speak first of the origin of ideas or notions (Book I.), the of the different kinds of ideas (Book II.), and of the wor that serve to express them (Book III.), lastly of the know edge and truths which therefrom result (Book IV.); and it this last part which will occupy us the most. As for the o gin of ideas, I believe, with this author and a multitude clever persons, that there are no innate ideas nor innate pri ciples.] And, in order to refute the error of those who adm them, it is sufficient to show, as it appears eventually, th there is no need of them, and that men can acquire all the knowledge without the aid of any innate impression.

Th. [You know, Philalethes, that I have been for a lo time of another opinion; that I have always held, as I st hold, to the innate idea of God, which Descartes maintaine and as a consequence to the other innate ideas, which cann come to us from the senses. Now, I go still farther in co- formity to the new system, and I believe even that all t thoughts and acts of our soul come from its own depths, wi no possibility of their being given to it by the senses, as y shall see in the sequel. But at present I will put this inves- gation aside, and, accommodating myself to the received e- pressions, since in fact they are good and tenable, and one c say in a certain sense that the external senses are in pa causes of our thoughts, I shall consider how in my opini one must say even in the common system (speaking of t action of bodies upon the soul, as the Copernicans speak wi other men of the movement of the sun, and with cause), th there are some ideas and some principles which do not come us from the senses, and which we find in ourselves without for ing them, although the senses give us occasion to perceive the

I imagine that your clever author has remarked that under the name of innate principles one often maintains his prejudices, and wishes to free himself from the trouble of discussion, and that this abuse doubtless has stirred up his zeal against this supposition. He desired, no doubt, to combat the indolence and the superficial manner of thinking of those who, under the specious pretext of innate ideas and of truths naturally engraved upon the mind, to which we readily give our consent, care nothing about investigating or considering the sources, the relations, and the certainty of this knowledge. In that I am entirely agreed with him, and I go even farther. I would that our analysis should not be limited, that definitions should be given of all the terms which are capable of definition, and that one should demonstrate, or give the means of demonstrating, all the axioms which are not primitive, without distinguishing the opinions which men have of them, and without caring whether they give their consent or not. There would be more profit in this than one thinks. But it seems that the author has been carried too far on the other side by his zeal, otherwise very praiseworthy. He has not sufficiently distinguished, in my opinion, the origin of the necessary truths, whose source is in the understanding, from that of the truths of fact drawn from the experience of the senses, and even from those confused perceptions which are in us. You see, then, that I do not agree with what you lay down as fact —that we can acquire all our knowledge without the need of innate impressions. And the sequel will show which of us is right.]

§ 2. *Ph.* We shall see it indeed. I grant you, my dear Theophilus, that there is no opinion more commonly received than that which establishes the existence of certain principles of truth in which men generally agree; this is why they are called *general notions*, κοιναὶ ἔννοιαι; whence it is inferred that these principles must be so many impressions which our minds receive with their existence. § 3. But though it were certain that there are some principles in which the entire human race is agreed, this universal consent would not prove that they are innate if one can show, as I believe he can, another way through which men have been able to reach this uniformity of opinion. § 4. But, what is much worse, this universal consent is nowhere found, not even with regard to these two celebrated *speculative principles* (for we shall speak about the *practical* ones later), that *whatever is, is;* and that *it is impossible for a thing to be and not to be at the same time.* For there is a large part of the human race to which these two propositions, which will pass doubtless for *necessary truths* and for axioms with you, are not even known.

Th. [I do not ground the certainty of innate principles upon universal consent, for I have already told you, Philalethes, that my opinion is that we ought to labor to be able to demonstrate all the axioms which are not primitive. I grant you also that a consent very general, but which is not universal may come from a tradition diffused throughout the human race, as the practice of smoking tobacco has been received by nearly all nations in less than a century, although some islanders have been found who, not being acquainted with fire even were unable to smoke. Thus some clever people, even among theologians, but of the party of Arminius,[1] have believed tha the knowledge of the Deity came from a very ancient and very general tradition; and I believe indeed that instruction has confirmed and rectified this knowledge. It appears, however that nature has contributed to its attainment without learning the marvels of the universe have made us think of a superio power. A child born deaf and dumb has been seen to show veneration for the full moon, and nations have been found who seemed not to have learned anything of other peoples fearing invisible powers. I grant you, my dear Philalethes, tha this is not yet the idea of God that we have and ask for; bu this idea itself does not cease to be in the depths of our souls without being put there, as we shall see, and the eternal law of God are in part engraved thereon in a manner still mor legible and by a species of instinct. But they are practica principles of which we shall also have occasion to speak. I must be admitted, however, that the inclination we have t recognize the idea of God is in human nature. And, even i the first instruction therein should be attributed to revelation the readiness which men have always shown to receive thi doctrine comes from the nature of their souls.[2] But we wi suppose that these ideas which are innate comprehend incompatible notions.

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[1] James Arminius, 1560–1609, a distinguished Dutch theologian. — TR.

[2] From this point on Gerhardt, whose edition, it will be remembered, is tl

§ 19. *Ph.* Although you maintain that these particular and self-evident propositions, whose truth is recognized as soon as one hears them stated (as that green is not red), are received as consequences of these other more general propositions, which are regarded as so many innate principles, it seems that you do not at all consider that these particular propositions are received as indubitable truths by those who have no knowledge of these more general maxims.

Th. I have already replied to that above. We build on these general maxims as we build upon the majors, which are suppressed when we reason by enthymemes; for, although very often we do not think distinctly of what we do in reasoning any more than of what we do in walking and leaping, it is always true that the force of the conclusion consists in part in that which is suppressed and could not elsewhere arise, as you will find should you wish to prove it.

§ 20. *Ph.* But it seems that general and abstract ideas are more foreign to our mind [than notions and particular truths; consequently particular truths will be more natural to the mind than the principle of contradiction, of which you admit they are only the application].

Th. It is true that we commence sooner to perceive particu-

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asis of the present translation, transposes the text as given by Erdmann and acques as follows: "Mais nous jugerons que ces idées qui sont innées, renerment des notions incompatibles," the first three words of which will be ound in Erdmann, p. 207, b., about two-thirds down the page, Jacques, Vol. 1, . 29, about two-thirds down, the remainder in Erdmann, p. 211, a., at the iddle of the page, Jacques, p. 36, first third, just preceding § 19 in each case, hence the three texts go on in agreement until § 26, G., p. 72, E., p. 212, b., ., p. 39. Here the Gerhardt text has the following: "S'il y a des verités innées, e faut il pas qu'il y ait dans la suite, que la doctrine externe ne fait qu'exciter y ce que est en nous": taking up with the words "dans la suite," the text s given by E., p. 207, b., J., p. 29, where it previously left it, the three texts ontinuing again in agreement until the words "dès qu'on s'apperçoit," G., p. 9, last third, E., 211, a., at the middle, J., 36, first third, whence G. completes is sentence with the last three words of the first sentence of § 26, as given by ., 212, b., J., 39, from which point again the three texts substantially agree the end of Chap. 1. It may be added that the texts of Erdmann, Jacques, nd Janet follow the order of Locke's Essay. Why Gerhardt has transposed e text in his edition, I do not know, as he has not alluded to the matter. rom his statement that "the present impression has been newly compared ith the original, so far as it is still extant" (Introduction, p. 10), I presume at the transposition is due to his fidelity to this original. — Tr.

lar truths when we commence with ideas more complex and gross; but that does not prevent the order of nature from commencing with the most simple, and the proof of the more particular truths from depending upon the more general, of whic they are only examples. And when we wish to consider wha is in us virtually and before all *apperception*, we are right i commencing with the most simple. For the general principle enter into our thoughts, of which they form the soul and th connection. They are as necessary thereto as the muscles an sinews are for walking, although we do not at all think o them. The mind leans upon these principles every moment but it does not come so easily to distinguish them and to represent them distinctly and separately, because that demand great attention to its acts, and the majority of people, littl accustomed to think, has little of it. Have not the Chines like ourselves articulate sounds? and yet being attached t another manner of writing, they have not yet thought o making an alphabet of these sounds. Thus it is that on possesses many things without knowing it.

§ 21. *Ph.* If the mind acquiesces so promptly in certai truths, cannot that acquiescence come from the consideratio itself of the nature of things, which does not allow it to judg of them otherwise, rather than from the consideration tha these propositions are engraved by nature in the mind?

Th. Both are true. The nature of things and the nature mind agree. And since you oppose the consideration of th thing to the apperception of that which is engraven in th mind, this objection itself shows, sir, that those whose side yo take understand by *innate truths* only those which would approved naturally as *by instinct*, and even without knowi it, unless confusedly. There are some of this nature, and shall have occasion to speak of them. But what is called *n* *ural light* supposes a distinct knowledge, and very often t consideration of the nature of things is nothing else than t knowledge of the nature of our mind, and of these innate ide which we have no need to seek outside. Thus I call inna the truths which need only this consideration for their veri cation. I have already replied (§ 5) to the objection (§ 2 which claimed that when it is said that innate notions a implicitly in the mind, the statement must mean simply th

; has the faculty of knowing them; for I have pointed out hat besides this it has the faculty of finding them in itself, nd the disposition to approve them when it thinks of them as ; should.

§ 23. *Ph.* It seems, then, that you claim that those to whom hese general maxims are proposed for the first time learn othing which is entirely new to them. But it is clear that hey learn first the names, then the truths, and even the ideas pon which these truths rest.

Th. The question here is not of names, which are in some ense arbitrary, while ideas and truths are natural. But, with espect to these ideas and truths, you attribute to us, sir, a octrine which we have strongly repudiated; for I agree that e learn ideas and innate truths either in considering their ource, or in verifying them through experience. Thus I do ot make the supposition which you aver, as if, in the case of hich you speak, we learned nothing new. And I cannot dmit this proposition: *all that one learns is not innate.* The ruths of numbers are in us, and we are not left to learn them, ither by drawing them from their source when we learn them hrough demonstrative proof (which shows that they are inate), or by testing them in examples, as do ordinary arithmecians, who, in default of a knowledge of the proofs, learn heir rules only by tradition, and, at most, before teaching hem, justify them by experience, which they continue as far s they think expedient. And sometimes even a very skilful athematician, not knowing the source of another's discovery, obliged to content himself with this method of induction in xamining it; as did a celebrated writer at Paris, when I was here, who continued a tolerably long time the examination of y arithmetical tetragonism, comparing it with the numbers Ludolphe,[1] believing he had found therein some error; and had reason to doubt until some one communicated to him e demonstration, which for us dispenses with these tests, hich could always continue without ever being perfectly rtain. And it is this very thing, namely, the imperfection inductions, which may yet be verified by instances of expeence. For there are progressions in which one can go very far before noticing the changes and the laws that are fou there.

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[1] John Job Ludolphe, 1649–1711: his *Tetragonometria Tabularia*, Frankt, 1690.—Tr.

Ph. But is it not possible that not only the terms or wo s which we use, but even the ideas, come to us from without

Th. It would then be necessary that we should be oursel s outside of ourselves, for the intellectual or reflective ideas e derived from our mind; and I should much like to know h we could have the idea of being if we were not beings o selves, and did not thus find being in ourselves.

Ph. But what do you say, sir, to this challenge of one of y friends? If any one, says he, can find a proposition wh e ideas are innate, that he can name to me, he would do m a very great favor.

Th. I would name the propositions of arithmetic and geo try, which are all of this nature; and, as regards necess y truths, no others could be found.

§ 25. *Ph.* That will appear strange to most people. Can t be said that the most difficult and the most profound scien s are innate?

Th. Their actual knowledge is not, but much that may e called virtual knowledge is innate, as the figure traced y the veins of the marble is in the marble, before one discov s them in working.

Ph. But is it possible that children, while receiving noti s that come to them from without, and giving them their c sent, may have no knowledge of those which you suppose o be inborn with them, and to make, as it were, a part of th r mind, in which they are, you say, imprinted in ineffacea e characters in order to serve as a foundation? If that were , nature would have taken trouble for nothing, or, at least, e would have badly engraved their characters, since they can t be perceived by the eyes which see very well other things.

Th. The apperception of that which is in us depends u n attention and order. Now, not only is it possible, but it is a o proper, that children give more attention to the ideas of e senses, because the attention is regulated by the need. e outcome, however, shows in the sequel that nature has t uselessly given herself the trouble of impressing upon us nate knowledge, since without it there would be no means f attaining actual knowledge of the truths necessary in e demonstrative sciences, and the reasons of facts; and we should possess nothing above the beasts.

§ 26. *Ph.* If there are innate truths, does it not necessarily follow that the external doctrine only stirs up here what is in us? I conclude that a consent sufficiently general among men is an indication, and not a demonstration, of an innate principle; but that the exact and decisive proof of these principles consists in showing that their certitude comes only from what is in us. To reply further to what you say against the general approbation which is given to the two great speculative principles, which are, nevertheless, the best established, I may say to you that even if they were not known they would not cease to be innate, because they are recognized as soon as heard; but I will add further that at bottom everybody knows them, and makes use at every moment of the principle of contradiction (for example) without considering it distinctly; and there is no barbarian who, in an affair of any moment, is not offended by the conduct of a liar who contradicts himself. Thus, these maxims are employed without an express consideration of them. And in nearly the same way we have virtually in the mind the propositions suppressed in enthymemes, which are set aside not only externally, but further in our hought.

§ 5. *Ph.* [What you say of this virtual knowledge and of hese internal suppressions surprises me]; for to say that here are truths imprinted upon the soul which it does not erceive is, it seems to me, a veritable contradiction.

Th. [If you are thus prejudiced, I am not astonished that ou reject innate knowledge. But I am astonished that the hought has not occurred to you that we have an infinite amount f knowledge of which we are not always conscious, not even hen we need it. It is for the memory to preserve this, and or the reminiscence to represent it to us, as it often, but not ways, does at need. That is very well called remembrance *subvenire*), for reminiscence needs some aid. And it must ertainly be that in this multiplicity of our knowledge we are etermined by something to renew one part rather than another, nce it is impossible to think distinctly and at once of everyhing we know.]

Ph. In that I believe you are right; and this too general affirmation, that we always perceive all the truths which ar in our soul, escaped me without my having given it sufficien attention. But you will have a little more trouble in replying to what I am going to show you. That is, that if you ca say of some particular proposition that it is innate, you coul maintain by the same reasoning that all propositions whic are reasonable, and which the mind could always regard a such, are already impressed upon the soul.

Th. I agree with you in regard to pure ideas, which I oppos to the phantoms of the senses, and in regard to necessar truths, or those of the reason, which I oppose to truths c fact. In this sense it must be said that all arithmetic and a geometry are innate, and are in us virtually, so that we ca find them there if we consider attentively and set in orde what we already have in the mind, without making use of an truth learned through experience or through the tradition c another, as Plato has shown in a dialogue[1] in which he intr duces Socrates leading a child to abstract truths by questio alone without giving him any information. We can the make for ourselves these sciences in our study, and even wit closed eyes, without learning through sight or even throug touch the truths which we need; although it is true that w would not consider the ideas in question if we had never see or touched anything. For through an admirable economy nature we cannot have abstract thoughts which have no ne whatever of anything sensible, when that would only be such a character as are the forms of the letters and the sound although there is no necessary connection between such arl trary characters and such thoughts. And if the sensible ou lines were not requisite, the pre-established harmony betwe soul and body, of which I shall have occasion to speak mo fully, would have no place. But that does not prevent t mind from taking necessary ideas from itself. You see al sometimes how it can go far without any aid, by a logic a arithmetic purely natural, as that Swedish youth who, in cul vating his own (mind), went so far as to make great calcu tions immediately in his head without having learned t common method of computation, or even to read and write, I remember correctly what has been told me of him. It

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[1] *Meno*, 82 *sq.* — TR.

rue that he cannot work out intricate problems, such as those
vhich demand the extraction of roots. But that does not at
ll prevent him from being able still to draw them from its
lepths by some new turn of mind. Thus that proves only
hat there are degrees in the difficulty of perceiving what is in
ıs. There are innate principles which are common and very
asy to all; there are theorems which are discovered likewise
t once, and which compose the natural sciences, which are
nore understood in one case than in another. Finally, in a
arger sense, which it is well to employ in order to have notions
nore comprehensive and more determinate, all truths which
an be drawn from primitive innate knowledge can still be
alled innate, because the mind can draw them from its own
epths, although often it would not be an easy thing so to do.
ut, if any one gives another meaning to the terms, I do not
ish to dispute about words.

Ph. [I have agreed with you that we can have in the soul
hat we do not perceive there, for we do not always remem-
er at once all that we know, but it must be always what we
ave learned or have known in former times expressly. Thus]
we can say that a thing is in the soul, although the soul
as not yet known it, this can only be because it has the
apacity or faculty of knowing it.

Th. [Why could not this have still another cause, such as
e soul's being able to have this thing within it without its
ing perceived? for since an acquired knowledge can be con-
aled therein by the memory, as you admit, why could not
ature have also concealed therein some original knowledge?
ust everything that is natural to a substance which knows
self be known by it actually at once? Cannot and must not
is substance (such as our soul) have many properties and
fections which it is impossible to consider all at once and all
gether? It was the opinion of the Platonists that all our
iowledge was reminiscence, and that thus the truths which
e soul has brought with the birth of the man, and which
e called innate, must be the remains of an express anterior
owledge. But this opinion has no foundation; and it is
sy to believe that the soul must already have innate knowl-
ge in the precedent state (if there were any pre-existence),
wever remote it might be, entirely as here: it would then

have to come also from another precedent state, or[1] it woul be finally innate, or at least concreate; or else it would b needful to go to infinity and to make souls eternal, in whic case this knowledge would be innate in fact, because it woul never have commenced in the soul; and if any one claime that each anterior state has had something from another mo anterior, which it has not left to the succeeding, the reply wi be made that it is manifest that certain evident truths mu have been in all these states; and in whatever manner it ma be taken, it is always clear in all states of the soul that nece sary truths are innate, and are proved by what is within, not being possible to establish them through experience, as w establish truths of fact. Why should it be necessary al that we could have no possession in the soul of which we h never made use? And is it the same thing to have a thin without using it as to have only the faculty of acquiring it If that were so, we should never possess anything but t things which we enjoy; instead of which, we know that, b sides the faculty and the object, some disposition in the fa ulty or in the object, or in both, is often necessary, that t faculty may exercise itself upon the object.]

Ph. Taking it in that way, we could say that there a truths written in the soul which the soul has, however, nev known, and which, indeed, it will never know. This appea to me strange.

Th. [I see there no absurdity, although in that case y could not be assured that there are such truths. For thin more exalted than those which we can know in this prese course of life may be developed some time in our souls, wh they are in another state.]

Ph. But suppose there are truths which could be imprint upon the understanding without its perceiving them; I not see how, in relation to their origin, they could differ fr the truths which it is only capable of knowing.

Th. The mind is not only capable of knowing them, b further of finding them in itself; and, if it had only the si ple capacity of receiving knowledge, or the passive power the for, as indeterminate as that which the wax has for receivi figures and the blank tablet for receiving letters, it would n

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[1] The reading of Gerhardt and Erdmann; Jacques has "où," where. — T

e the source of necessary truths, as I have just shown that it
; for it is incontestable that the senses do not suffice to
iow their necessity, and that thus the mind has a disposition
ictive as well as passive) to draw them itself from its own
epths; although the senses are necessary to give it the occa-
on and attention for this, and to carry it to some rather than
others. You see, then, sir, that these elsewhere very clever
ersons who are of another opinion appear not to have thought
iough upon the consequences of the difference which there is
tween necessary or eternal truths and the truths of experi-
ice, as I have already observed, and as all our discussion
ows. The original proof of the necessary truths comes
om the understanding alone, and the other truths come from
perience or from the observation of the senses. Our mind
capable of knowing both; but it is the source of the former,
d, whatever number of particular experiences we may have
a universal truth, we could not be assured of it forever by
duction without knowing its necessity through the reason.

Ph. But is it not true that if the words, *to be in the under-*
inding, involve something positive, they signify to be per-
ived and comprehended by the understanding?

Th. They signify to us wholly another thing. It is enough
at what is in the understanding can be found there, and that
e sources or original proofs of the truths which are in ques-
n are only in the understanding; the senses can hint at,
stify, and confirm these truths, but cannot demonstrate their
fallible and perpetual certainty.

§ 11. *Ph.* Nevertheless, all those who will take the trouble
reflect with a little attention upon the operations of the
derstanding will find that this consent, which the mind gives
thout difficulty to certain truths, depends upon the faculty
the human mind.

Th. Very well. But it is this particular relation of the
man mind to these truths which renders the exercise of the
ulty easy and natural in respect to them, and which causes
em to be called innate. It is not, then, a naked faculty
ich consists in the mere possibility of understanding them;
s a disposition, an aptitude, a preformation, which determines
soul and which makes it possible for them to be derived
m it. Just as there is the difference between the figures

which are given to the stone or the marble indifferently, an between those which its veins already indicate, or are dispose to indicate, if the workman profits by them.

Ph. But is it not true that the truths are subsequent to th ideas of which they are born? Now, the ideas come fro the senses.

Th. The intellectual ideas, which are the source of necessary truths, do not come from the senses; and you admit tha there are some ideas which are due to the reflection of th mind upon itself. For the rest, it is true that the expres knowledge of truths is subsequent (*tempore vel natura*) to th express knowledge of ideas; as the nature of truths depen upon the nature of ideas, before we expressly form one or th other, and the truths, into which enter ideas which come fro the senses, depend upon the senses, at least in part. But tl ideas which come from the senses are confused, and the trut which depend upon them are likewise confused, at least i part; while the intellectual ideas, and the truths depende upon them, are distinct, and neither the one nor the oth have their origin in the senses, although it may be true th we would never think of them without the senses.

Ph. But, in your view, numbers are intellectual ideas, a yet it is found that the difficulty therein depends upon t express formation of the ideas; for example, a man kno that 18 and 19 equal 37 with the same evidence that he kno that 1 and 2 equal 3; but a child does not know the first prop sition so soon as the second, a condition arising from the fa that he has not formed the ideas as soon as the words.

Th. I can agree with you that often the difficulty in t express formation of truths depends upon that in the expre formation of ideas. Yet I believe that in your example t question concerns the use of ideas already formed. For th who have learned to count as far as 10, and the method passing farther on by a certain repetition of tens, understa without difficulty what are 18, 19, 37; viz., 1, 2, or 3 times with 8, or 9, or 7; but, in order to draw from it that 18 pl 19 make 37, more attention is necessary than to know tha plus 1 are 3, which at bottom is only the definition of 3.

§ 18. *Ph.* Furnishing propositions in which you infalli acquiesce as soon as you hear them is not a privilege attac to the numbers or to the ideas, which you call intellectual. You meet these in physics and in all the other sciences, and the senses even furnish them. For example, this proposition: *two bodies cannot be in the same place at the same time*, is a truth of which you are not otherwise convinced than of the following maxims: *It is impossible for a thing to be and not to be in the same time;* white is not red; *the square is not a circle;* yellowness is not sweetness.

Th. There is a difference between these propositions. The first, which declares the impenetrability of bodies, needs proof. All those who believe in true and strictly formed condensation and rarefaction, as the Peripatetics and the late Chevalier Digby,[1] reject it, in fact; without speaking of the Christians who believe, for the most part, that the contrary view — namely, the penetration of space — is possible to God. But the other propositions are *identical*, or very nearly so, and identical or immediate propositions do not admit of proof. Those who look upon the senses as furnishing them, as that one who says that yellowness is not sweetness, have not applied the general identical maxim to particular cases.

Ph. Every proposition composed of two different ideas, of which one is the denial of the other — for example, that the square is not a circle, that to be yellow is not to be sweet — will be as certainly received as indubitable, as soon as its terms are understood, as *this general maxim:* It is impossible for a thing to be and not to be in the same time.

Th. That is, the one (namely, the general maxim) is the principle, and the other (that is to say, the negation of one dea by another opposed to it) is its application.

Ph. It seems to me rather that the maxim depends upon his negation, which is its ground; and that it is, besides, much easier to understand that *what is the same thing is not different*, than the maxim which rejects the contradictions. Now, according to this statement, it will be necessary for you o admit as innate truths an infinite number of propositions of his kind which deny one idea by another without speaking

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[1] Sir Kenelm Digby, 1603–1665, an eminent English physical philosopher, ho lived for a time in France, where he enjoyed the friendship of Descartes nd other learned men, and wrote his *Treatise on the Nature of Bodies* and her works. — TR.

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of other truths. Add to this, that a proposition cannot b innate unless the ideas of which it is composed are innate it will be necessary to suppose that all the ideas which w have of colors, sounds, tastes, figures, etc., are innate.

Th. I do not well see how this: *what is the same thing i not different,* is the origin of the principle of contradictior and easier; for it appears to me that you give yourself mor freedom in advancing that A is not B than in saying that A i not non-A. And the reason that prevents A from being B i that B includes non-A. For the rest this proposition: *th sweet is not the bitter,* is not innate, according to the sens which we have given to the term innate truth. For the ser sations of sweet and bitter come from the external senses Thus it is a mixed conclusion (*hybrida conclusio*), where th axiom is applied to a sensible truth. But as regards thi proposition: *the square is not a circle,* you can affirm that i is innate, for, in considering it, you make a subsumption o application of the principle of contradiction to what the ur derstanding itself furnishes as soon as you are conscious c innate thoughts.

Th. Not at all, for the thoughts are acts; and the knowledg or the truths, in so far as they are within us, even when w do not think of them, are habitudes or dispositions; and w are well acquainted with things of which we think but little.

Ph. It is very difficult to conceive that a truth may be i the mind if the mind has never thought of that truth.

Th. It is as if some one said it is difficult to conceive tha there are veins in the marble before we have discovered then This objection seems also to approach a little too much th begging of the question.[1] All those who admit innate truth without grounding them in the Platonic reminiscence, adm some of which they have not yet thought. Besides, th reasoning proves too much; for, if truths are thoughts, w shall be deprived not only of the truths of which we hav never thought, but also of those of which we have though and of which we no longer actually think; and if truths ar not thoughts, but habits and aptitudes, natural or acquire nothing prevents there being in us some of which we hav never thought, nor will ever think.

[1] *Petitio principii.* — Tr.

§ 27. *Ph.* If general maxims were innate, they would appear iore vividly in the mind of certain persons where, however, re see no trace of them; I may mention children, idiots, and avages,[1] for of all men these are they who have the mind ess altered and corrupted by custom and by the impress of xtraneous opinions.

Th. I believe we must reason here very differently. Innate iaxims appear only through the attention which is given to iem; but these persons have little of it, or have it for ntirely different things. Their thoughts are mostly confined the needs of the body; and it is reasonable that pure and etached thoughts be the reward of cares more noble. It is ue that children and savages have the mind less altered by ustoms, but they also have it exalted by the teaching which ives attention. It would not be very just that the brightest ghts should shine better in minds which less deserve them, nd which are enveloped in thicker clouds. I would not then ave one give too much honor to ignorance and barbarism hen one is as learned and as clever as you are, Philalethes, s well as your excellent author; that would be lowering the ifts of God. Some one will say that the more ignorant we e, the more we approach the advantage of a block of marble of a piece of wood, which are infallible and sinless. But, nfortunately, it is not by ignorance that we approach this dvantage; and, as far as we are capable of knowledge, we n in neglecting to acquire it, and we shall fail so much the ore easily as we are less instructed.

CHAPTER II

NO INNATE PRACTICAL PRINCIPLES

§ 1. *Ph.* Ethics is a demonstrative science, and yet it has innate principles. And, indeed, it would be very difficult produce a rule of ethics of a nature to be settled by an sent as general and as prompt as this maxim: *Whatever is.*

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[1] For an excellent exposition of the content of the term *savage*, *cf.* Andrew ng, *Myth, Ritual, and Religion*, Vol. 1, p. 31, and note; also chap. 3, pp. *sq.*, London: Longmans, Green, & Co., 1887.—Tr.

Th. It is absolutely impossible that there be truths o reason as evident as those which are *identical* or immediat And, although you can truly say that ethics has principle which are not demonstrable, and that one of the first and mos practical is, that we ought to pursue joy and avoid sorrow, i is needful to add that this is not a truth which is know purely by reason, since it is based upon internal experience, c upon confused knowledge, for we do not feel what joy c sadness is.

Ph. It is only through processes of reasoning, through la guage, and through some mental application, that you can b assured of practical truths.

Th. Though that were so, they would not be less innat However, the maxim I just adduced appears of another n ture; it is not known by the reason, but, so to speak, by a *instinct.* It is an innate principle, but it does not form part of the natural light, for it is not known luminously. Bu this principle admitted, you can draw from it scientific co sequences, and I commend most heartily what you just said ethics as a demonstrative science. Let us note also that teaches truths so evident that thieves, pirates, and bandits a forced to observe them among themselves.

§ 2. *Ph.* But bandits keep the rules of justice among ther selves without considering them as innate principles.

Th. What matters it? Does the world concern itself abo questions of theory?

Ph. They observe the maxims of justice only as convenie rules, the practice of which is absolutely necessary to the co servation of their society.

Th. [Very well. You could say nothing better in general respect to all men. And thus it is that these laws are writt in the soul, namely, as the consequences of our preservati and of our true welfare. Do you imagine that we suppo that truths are in the understanding as independent the one the other as the edicts of the prætor were on his placard *album?* I put aside here the *instinct* which prompts man love man, of which I shall presently speak, for now I wish speak only of truths in so far as they are known by *the reas* I admit, also, that certain rules of justice cannot be dem strated, in all their extent and perfection, without supposi the existence of God and the immortality of the soul, and these, where the instinct of humanity does not impel us, are written in the soul only as other derivative truths.] Those, however, who base justice only upon the necessities of this life and upon the need they have of it, rather than upon the pleasure they ought to take in it, which is the greatest when God is its ground, are liable to resemble a little the society of bandits.

Sit spes fallendi, miscebunt sacra profanis.[1]

§ 3. *Ph.* I agree with you that nature has put in all men the desire for happiness and a strong aversion to misery. These are *the truly innate practical principles*, and principles which, according to the purpose of every practical principle, have a continual influence upon all our actions. But they are nclinations of the soul toward the good, and not impressions[2] of some truth which is written in our understanding.

Th. [I am delighted, sir, to see that you admit in effect nnate truths, as I shall presently say. This principle agrees ufficiently with that which I just indicated, which prompts us to seek joy and shun sorrow. For *felicity* is only a lasting joy. Our inclination, however, does not tend to felicity proper, but to joy — that is to say, to the present; it is the eason which prompts to future and enduring welfare. Now, he inclination, expressed by the understanding, passes into a *precept* or practical truth; and if the inclination is innate, the ruth is innate also, there being nothing in the soul which may not be expressed in the understanding, but not always by consideration actually distinct, as I have sufficiently shown. The *instincts* also are not always practical; there are some which contain theoretical truths, and such are the internal rinciples of the sciences and of reasoning, when, without recognizing the reason in them, we employ them by a natural nstinct. And in this sense you cannot dispense with the recognition of innate principles, even though you might be illing to deny that derivative truths are *innate*. But this ould be a question of name merely after the explanation I have given of what I call *innate*. And if any one desires to give this appellation only to the truths which are received at first by instinct, I shall not contest the point with him.]

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[1] *Cf.* Hor. *Epist.*, 1, 16, 54. Horace has "miscebis." — TR.

[2] Erdmann and Jacques read, "des imperfections de quelque vérité." Ger- rdt reads, "des impressions de quelque vérité." Locke has, "impressions truth." Book I., chap. 3, § 3. Vol. 1, p. 158, line 5, Bohn's edition. — TR.

Ph. That is well. But if there were in our soul certain characters imprinted there by nature, like so many principles of knowledge, we could only perceive them acting in us, as we feel the influence of the two principles which are constantly active in us — namely, the desire of happiness and the fear of misery.

Th. [There are principles of knowledge which influence us as constantly in our reasoning processes as these practical principles influence us in our volitions; for example, everybody employs the rules of deduction by a *natural logic* without being aware of it.

§ 4. *Ph.* The rules of Morality need to be proved; they are then not innate, like that rule which is the source of the virtues which concern society: *Do to another only what you would have him do to yourself.*

Th. You always make me the objection which I have already refuted. I agree with you that there are moral rules which are not *innate principles;* but that does not prevent them from being innate truths, for a derivative truth will be innate, supposing that we can draw it from our mind. But there are innate truths, which we find in us in two ways — by insight and by instinct. Those which I have just indicated, show by our ideas what natural insight accomplishes. But there are conclusions of *natural light* which are principles in relation to *instinct*. It is thus that we are prompted to acts of humanity, by instinct because it pleases us, and by reason because it is just. There are then in us truths of instinct, which are innate principles, which we feel and approve, although we have not the proof of them which we obtain, however, when we give a reason for this instinct. It is thus that we make use of the laws of deduction conformably to a confused knowledge and as by instinct, but logicians show the reason of them, as mathematicians also give a reason for what they do without thinking in walking and leaping. As for the rule which states that we ought to do to others only what we would have them do to us, it needs not only proof, but also to be proclaimed. We should wish too much for ourselves if we could have our own vay; shall we say then that we also owe too much to others?[1] You will tell me that the rule means only a just will. But hus this rule, very far from being adequate to serve as a neasure, would itself need one. The true sense of the rule s, that the place of another is the true point of view for equiable judgment when we attempt it.]

§ 9. *Ph.* Bad acts are often committed without any remorse f conscience; for example, when cities are carried by storm, he soldiers commit, without scruple, the worst acts; some ivilized nations have exposed their children, some Caribbees astrate theirs in order to fatten and eat them. Garcilasso de a Vega[2] reports that certain peoples of Peru took prisoners in rder to make concubines of them, and supported the children p to the age of thirteen, after which they ate them, and reated in the same manner the mothers so soon as they no onger bore children. In the travels of Baumgarten[3] it is re- ited that there was a Santon[4] in Egypt who passed for a holy ian, *eo quod non fœminarum unquam esset ac puerorum, sed ıntum asellarum concubitor atque mularum.*

Th. Moral science (over and above the instincts like that hich makes us seek joy and shun sadness) is not otherwise ınate than is arithmetic, for it depends likewise upon demonrations which internal light furnishes. And as the demıstrations do not at once leap into sight, it is no great wonder, men do not perceive always and at once all that they pos- ss in themselves, and do not read quite readily the *characters the natural law, which God, according to St. Paul,*[5] *has writ- ı in their minds.* As morality, however, is more important an arithmetic, God has given to man *instincts* which prompt at once and without reasoning to some portion of that which reason ordains; just as we walk in obedience to the laws of mechanics without thinking of these laws, and as we eat not only because eating is necessary for us, but further and much more because it gives us pleasure. But these instincts do not prompt to action in an invincible way; the passions may resist them, prejudices may obscure them, and contrary customs alter them. Nevertheless, we agree most frequently with these instincts of conscience, and we follow them also when stronger impressions do not overcome them. The greatest and most healthy part of the human race bears them witness. The Orientals, the Greeks and Romans, the Bible and the Koran agree in respect to them; the Mahometan police are wont to punish the thing Baumgarten tells of, and it would be needful to be as brutalized as the American savage in order to approve their customs, full of a cruelty which surpasses even that of the beasts. Yet these same savages perceive clearly what justice is on other occasions;[1] and althoug there is no bad practice, perhaps, which may not be authorize in some respects and upon some occasions, there are few o them, however, which are not condemned very frequently an by the larger part of mankind. That which has not been attained without reason, and was not attained by reasoning alone should be referred in part to the natural instincts. Custom tradition, discipline, are mingled therein, but it is due to instinct (*le naturel*) that custom is turned more generally to th good side of these duties. In the same way,[2] the *tradition* o God's existence is due to *instinct* (*le naturel*). Now natur ives to man and also to most of the animals affectionate and ender feeling for those of their species. The tiger even *par-it cognatis masculis;*[1] whence comes this *bon mot* of a Roman urisconsult, *Quia inter omnes homines natura cognationem onstituit, unde hominum homini insidiari nefas esse.* Spiders orm almost the only exception, and these eat one another this extent that the female devours the male after having njoyed him. Besides this general instinct of *society*, which ay be called *philanthropy* in man, there are some more par-cular forms of it, as the affection between the male and the emale, the love which father and mother bear toward the chil-ren, which the Greeks call *στοργή*,[2] and other similar inclina-ons which make this natural law, or this image of law rather, hich, according to Roman jurisconsults, nature has taught ne animals. But in man in particular there is found a certain egard for dignity, for propriety, which leads him to conceal ne things which lower us, to be sparing of shame, to have epugnance for incests, to bury dead bodies, not to eat men at l, nor living animals. One is led further to be careful of his eputation, even beyond need, and of life; to be subject to emorse of conscience, and to feel these *laniatus et ictus,* ese tortures and torments of which Tacitus, following Plato, eaks;[3] besides the fear of a future and of a supreme power hich arises, moreover, naturally enough. There is reality in l that; but at bottom these natural impressions, whatever ey may be, are only aids to the reason and indices of the an of nature. Custom, education, tradition, reason, contrib-e much, but human nature ceases not to participate therein. is true that without the reason these aids would not suffice give a complete certitude to morals. Finally, will you deny at man is naturally led, for example, to withdraw from vile ings, under a pretext that races are found who like to speak ly of filth, that there are some, indeed, whose mode of life liges them to handle excrements, and that there are people Boutan, where those of the king pass as an aromatic? I ink that you are of my opinion at bottom in regard to these tural instincts which tend toward what is right and decent;

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[1] This sentence is found in the texts of Erdmann and Gerhardt; it is want- ; in that of Jacques. — TR.

[2] Garcilasso de la Vega, 1540–1616, the son of an Inca princess, and a Span- conqueror, a companion of Pizarro. His *Commentarios reales* was pub- ıed in two parts, the first at Lisbon, 1609, giving an account of the native ditions, customs, and history previous to the Spanish conquest; the second ler the separate title of *Historia General del Peru*, Cordova, 1617, treating the Spanish conquest. The earlier and more important part of the work been translated, with "learned and ingenious notes," by Clements R. rkham, and published in the collection of the Hakluyt Society, 2 vols., ıdon: 1869, 1871. — TR.

Martin Baumgarten, 1473–1535, *Travels through Egypt, Arabia, etc.* In ırchill, O. and J. Col., Vol. 1, 1744. — TR.

Mahometan monk. — TR.

[5] Rom. 2:15; *cf.* 1:19. — TR.

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[1] *Cf.* J. G. Schurman, *The Ethical Import of Darwinism*, pp. 256–260, New York: Charles Scribner's Sons, 1887. He states that "some gropings amid th general darkness incline me, at least tentatively, to the belief that, apart fro the domestic virtues, there is no such great difference between the morals Christians and the morals of savages" (p. 256). This statement is modifie further on, pp. 258, 259, and finally takes the following form: "The fightin men, actual and potential, in every uncivilized community recognize the sam rights, obligations, and duties toward one another as constitute the essence civilized morality. You never find a man without a moral nature, a natu essentially like our own; but the objects he includes within the scope of i outgoings vary" (p. 259). For the real significance of such facts, *cf.* E Pres. E. G. Robinson, of Brown University, *Principles and Practice of Morality*, p. 43, Boston: Silver, Burdett & Co., 1888. — Tr.

[2] Gerhardt reads, "C'est comme *le naturel*," etc.; Erdmann and Jacque "Le naturel," etc. — Tr.

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[1] Juv. *Sat.*, 15, 159–160. — Tr.

[2] The reading (*nom.* στοργή) of Erdmann and Jacques. Gerhardt's reading, ὴν, is evidently an error. — Tr.

[3] *Gorgias*, 524 E; *Ann.* 6, 6. — Tr.

although you will say, perhaps, as you have said with regar
to the instinct which prompts to joy and felicity, that thes
impressions are not innate truths. But I have already replie
that every feeling is the perception of a truth, and that th
natural feeling is the (perception) of an innate truth, but ver
often confused, as are the experiences of the external senses
thus you can distinguish the *innate truths* from the *natura*
light (which contains only the distinctly knowable), as th
genus must be distinguished from its species, since *the innat*
truths comprehend both *the instincts* and the *natural light.*]

§ 11. *Ph.* A person who knew the natural limits of justic
and injustice, and (who) would not cease confusing them wit
each other, could only be regarded as the declared enemy
the repose and the welfare of the society of which he is a mer
ber. But men confuse them every moment, consequently the
do not know them.

Th. [That is taking things a little too theoretically.
happens every day that men act contrary to their knowledge
concealing these (limits) from themselves when they turn t
mind elsewhere, in order to follow their passions; otherwis
we should not see people eating and drinking what they kno
must cause them sickness and even death. They would n
neglect their business; they would not do what entire natio
have done in certain respects. The future and reason rare
make so strong an impression as the present and the sens
That Italian knew this well, who, before being put to tortu
proposed to have the gallows continually in sight during t
torments in order to resist them, and they heard him say son-
times, "*Io ti vedo,*" which he explained afterward when he h
escaped. Unless you firmly resolve to look upon the true go
and the true evil with the purpose of following or shunni
them, you find yourself carried away, and it happens, with -
gard to the most important needs of this life, as it happens wi
regard to paradise and hell in the case of those, indeed, w
believe in them the most: —

Cantantur hæc, laudantur hæc,
  Dicuntur, audiuntur.
Scribuntur hæc, leguntur hæc,
  Et lecta negliguntur.]

Ph. Every principle which you suppose innate can only be known by each one as just and advantageous.

Th. [You always return to this supposition, which I have refuted so many times, that every innate truth is known always and by all.]

§ 12. *Ph.* But a public permission to violate the law proves that this law is not innate; for example, the law requiring the ove and preservation of children was violated among the ancients when they permitted their exposure.

Th. [This violation supposed, it follows only that you have not well read these characters of nature written in our soul, but sometimes obscure enough by reason of our excesses, not to mention that, in order to have a perfectly clear perception of the necessity of duties, men must see the demonstration of them — a condition that is rarely fulfilled. If geometry were as much opposed to our passions and present interests as is ethics, we should contest it and violate it but little less, notwithtanding all the demonstrations of Euclid[1] and of Archimedes,[1] which you would call dreams and believe full of paralogisms; and Joseph Scaliger, Hobbes,[2] and others, who have written gainst Euclid and Archimedes, would not find themselves in uch a small company as at present. It was only the passion for glory, which these authors believed they found in the quadrature of the circle and other difficult problems, which could blind to such a point persons of so great merit. And if others had the same interest, they would make use of it in much the same manner.]

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[1] Euclid, not to be confounded with Euclid of Megara, a pupil of Socrates,
under of the Megarian school, the fundamental principle of whose philosophy
as the union of the Eleatic idea of *being* with the Socratic idea of the *good*.
he date of neither his birth nor death is known. Proclus, the Neo-Platonist,
0–485 A.D., says that Euclid lived in the time of Ptolemy I., king of Egypt,
ho reigned from 323–285 B.C., and that he was younger than Plato's associates,
t older than Eratosthenes, "276–2—196–2 B.C.," "the celebrated scholar
hose chronological dates were adopted for the history of philosophy" (Zeller,
tlines, §§ 3, 66), and Archimedes, 287–212 B.C. Proclus preserves Euclid's
ply to King Ptolemy, who asked him if there were no easier way to learn
ometry than by studying his elements. "There is no royal road to geom-
ry." — TR.

[2] Thomas Hobbes, 1588–1679. The statement of his geometrical principles
opposition to those of Euclid is found in the Appendix to the English trans-
ion of the *De Corpore*, which appeared about the middle of 1656, entitled
x Lessons to the Professors of Mathematics, one of Geometry, the other of
tronomy, in the University of Oxford, English Works, Vol. 7, pp. 181–356.
r an account of the controversy in which these appeared, *cf.* George Croom
bertson, *Hobbes*, pp. 167–178 (Philosophical Classics). Edinburgh: William
ckwood & Sons, 1886. — TR.

Ph. Every duty carries the idea of law, and a law cannot be known or supposed without a *legislator* who has prescribed it, or without reward and without punishment.

Th. [There can be *natural rewards and penalties* without a legislator; intemperance, for example, is punished by disease. As this, however, does not injure all at first, I admit that there are few precepts to which you would necessarily be bound if there were not a God who leaves no crime without chastisement, no good act without reward.]

Ph. The ideas of a God and of a life to come must then als be innate.

Th. [I am agreed in the sense in which I have explaine myself.]

Ph. But these ideas are so far from being written by natur in the minds of all men, that they even do not appear very clea and very distinct in the minds of many students, who also pro fess to examine things with some accuracy; so far are the from being known by every human being.

Th. You return again to the same proposition, which mai tains that what is not known is not innate, which I have, how ever, refuted so many times. What is innate is not at firs known clearly and distinctly as such; often much attentio and method is necessary in order to its perception, the studen class do not always adduce it, still less every human being.

§ 13. *Ph.* But if men can be ignorant of or call in questic that which is innate, it is in vain for you to speak to us of i nate principles, and to claim to show us their necessity; ve far from their being able to serve as our instructors in the tru and certitude of things, as is maintained, we shall find o selves, with these principles, in the same state of uncertain as if they were not in us.

Th. You cannot call in question all the innate principl You were agreed in regard to identical propositions or t principle of contradiction, admitting that there are inconte able principles, although you would not then recognize th as innate; but it does not at all follow that everything whi is innate and necessarily connected with these innate principles, is also at first indubitably evident.

Ph. No one that I know of has yet undertaken to give us an exact catalogue of these principles.

Th. But has any one hitherto given us a full and exact catalogue of the axioms of geometry?

§ 15. *Ph.* My Lord Herbert[1] has been pleased to point out some of these principles, which are: 1. There is a supreme God. 2. He ought to be served. 3. Virtue united with piety is the best worship. 4. Repentance for sin is necessary. 5. There are penalties and rewards after this life. I agree that these are evident truths and of such a nature that when well explained a reasonable person can scarcely avoid giving them his consent. But our friends say that they are very far from being so many innate impressions, and if these five propositions are common notions written in our souls by the inger of God, there are many others which we ought also to put into this class.

Th. I agree with you, sir, for I take all the *necessary truths* s innate, and I connect with them also the *instincts.* But, I gree with you, that these five propositions are not innate principles; for I hold that they can and ought to be proved.

§ 18. *Ph.* In the third proposition, that virtue is the worship most agreeable to God, it is not clear what is meant by *irtue.* If you understand it in the sense most commonly given to the term, I mean that which passes as praiseworthy ccording to the different opinions which prevail in different ountries, this proposition is so far from being evident that it not even true. If you call *virtue*[2] the acts which are conformed to the will of God, this will be almost *idem per idem,* nd the proposition will teach us nothing of importance; for would mean only that God is pleased with that which is conrmed to his will. It is the same with the notion of *sin* in he fourth proposition.

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[1] Lord Edward Herbert of Cherbury, 1581–1648. His *De Veritate*, Paris, 24, has had considerable influence on English philosophical and religious ought, and is of some importance in the interpretation of the polemic of cke's Essay. — Tr.

[2] For an excellent but brief statement and discussion of the main theories of tue, *cf.* E. G. Robinson: *Principles and Practice of Morality*, pp. 140-1. — Tr.

Th. I do not remember to have remarked that virtue is commonly taken as something which depends upon opinion; at least, the philosophers do not make it that. It is true that the name of virtue depends upon the opinion of those who give it to different habits or actions, according as they deem them good or bad and use their reason; but all are sufficiently agreed as to the notion of virtue in general, although they differ in its application. According to Aristotle[1] and several others, *virtue* is a habit of restraining the passions by the reason, and still more, simply a habit of acting according to reason. And that cannot fail to be agreeable to him who is the supreme and final reason of things, to whom nothing is indifferent, and the acts of rational creatures less than all others.

§ 20. *Ph.* You are wont to say that the custom, the education, and the general opinions of those with whom you converse may obscure these principles of morality which you suppose innate. But if this reply is a good one, it annihilates the proof which you pretend to draw from universal consent The reasoning of many men reduces to this: The principles which men of right reason admit, are innate; we and those of our mind are men of right reason; consequently our principles are innate. A pleasant method of reasoning, which goes straight on to infallibility!

Th. For myself, I make use of universal consent, not as principal proof, but as a confirmatory one; for innate truth taken as the *natural light* of reason bear their marks wit them as does geometry, for they are wrapped up in the im mediate principles which you yourselves admit as incontesta ble. But I grant that it is more difficult to distinguish th *instincts* and some other natural habits from custom, althoug it may very often be possible so to do. For the rest, it appear to me that people who have cultivated their minds have som ground for attributing the use of right reason to themselve rather than to the barbarians, since in subduing them almos as easily as they do animals they show sufficiently their sup riority. But if they cannot always succeed in this, it is because just like the animals they conceal themselves in the thick forests, where it is difficult to hunt them down and the game is not worth the candle. It is doubtless an advantage to have cultivated the mind, and if we may speak for barbarism as against culture, we shall also have the right to attack reason in favor of the animals, and to take seriously the witty sallies of M. Despreaux,[1] in one of his satires, where, in order to contest with man his prerogative over the animals, he asks, whether,

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[1] *Eth. Nic.* II. 6, *ad init.* *Cf.* Zeller: *Outlines of the Hist. of Greek Philo* § 61; and E. Wallace: *Outlines of the Philos. of Aristotle*, 3d ed., § 59, pp. 9 99. Cambridge: University Press, 1883. In connection with each section his brief English statement and exposition, Wallace gives the Greek text "the more important passages in Aristotle's writings," with references to t Berlin Academy edition of Aristotle. — TR.

> The bear is afraid of the passer-by, or the passer-by of the bear;
> And if, by decree of the shepherds of Libya,
> The lions would vacate the parks of Numidia, etc.

We must, however, admit that there are some points in which the barbarians surpass us, especially as regards vigor of body; and as regards the soul even we may say that in certain respects their practical morality is better than ours, because they have not the avarice of hoarding nor the ambition of ruling. And we may even add that association with Christians has made them worse in many respects.[2] They have taught them drunkenness (when carrying them the water of life), swearing, blasphemy, and other vices, which were little known to them. There is with us more of good and of evil than with them: a bad European is worse than a savage — he refines upon evil.[3] Still, nothing should prevent men from uniting the advantages which nature gives to these peoples with those which reason gives us.

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[1] Nicolas Boileau-Despreaux, 1636–1711. The passage quoted is from Sat. 8, 62–64. The text as given by all the editions I have been able to consult, twelve, ranging from 1716–1873, reads thus:

> "L'ours a peur du passant, ou le passant de l'ours;
> Et si, sur un édit des pâtres de Nubie,
> Les lions de Barca videraient la Lybie;" etc.

Lines 63 and 64 of the text, as given by Leibnitz, editions of Gerhardt and Erdmann, Jacques modernizing the spelling and correcting the misplacement of "de" and "des" in line 63, read thus:

> "Et si par un édit de pastres des Lybie
> Les Lions vuideroient les parcs de Numidie," etc.

It seems evident that Leibnitz misquoted the lines. — TR.

[2] Compare J. G. Schurman: *The Ethical Import of Darwinism*, pp. 256–260 as above. — TR.

[3] The French is: "il rafine sur le mal." — TR.

Ph. But what reply do you make, sir, to this dilemma of one of my friends? I would be pleased, he says, to have the advocates of innate ideas tell me whether these principles can or cannot be effaced by education and custom. If they cannot be effaced we ought to find them in all men, and they should clearly appear in the mind of each particular man. If they can be altered by extraneous ideas, they ought to appear more distinctly and with more lustre the nearer they are to their source. I mean in children or illiterate people, upon whom extraneous opinions have made less impression. Let them take which side they please, they will clearly see, he says, that it is contradicted by indubitable facts and by continual experience.

Th. I am astonished that your clever friend has confounded *obscurity* with *effacement,* as some in your party confound *non-being* with *non-appearance.* Innate ideas and truths cannot be effaced, but they are obscured in all men (as they are now) by their inclination toward the needs of the body, and oftener still by the occurrence of bad customs. These characteristics of the internal light would always be shining in the understanding and would give fervor to the will, if the confused perceptions of sense did not engross our attention. It is the struggle of which Holy Scripture no less than ancient and modern philosophy speaks.

Ph. Thus, then, we find ourselves in darkness as thick and in uncertainty as great as if there were no such light.

Th. God forbid; we should have neither science nor law nay, not even reason.

§ 21, 22, etc. *Ph.* I hope that you will at least admit th force of prejudice, which often causes that to pass as natura which has come from the bad instruction to which childre have been exposed, and the bad customs which education an association have given them.

Th. I admit that the excellent author whom you follow say some very fine things upon that subject, and which have thei value if they are taken as they should be; but I do not believ that they are opposed to the doctrine properly understood o nature or of innate truths. And I am confident that he will no extend his remarks too far; for I am equally persuaded tha a great many opinions pass for truths which are only the effec

of custom and of credulity, and that there are many such opin-
ons, too, which certain philosophers would fain account for as
natters of prejudice, which are, however, grounded in right
eason and in nature. There is as much or more ground for de-
ending ourselves from those who through ambition oftenest
nake pretensions to innovation, than for challenging ancient im-
ressions. And after having meditated sufficiently upon ancient
nd modern thought, I have found that the majority of the re-
eived doctrines may bear a good sense. So that I wish that
ensible men would seek to satisfy their ambition by occupy-
ng themselves rather in building and advancing than in retro-
rading and destroying. And I desire them to resemble the
Romans who constructed beautiful public works, rather than
hat Vandal king[1] whom his mother charged to seek the de-
truction of these grand structures, since he could not hope for
he glory of equalling them.

Ph. The aim of the clever class who have contended against
nnate truths has been to prevent men from handing round
heir prejudices and seeking to cover their idleness beneath
his fair name.

Th. We are agreed upon this point, for, very far from ap-
roving that doubtful principles be received, I would, for my-
elf, seek even the demonstration of the axioms of Euclid, as
ome ancients also have done. And when you ask the means
f knowing and examining innate principles, I reply, following
hat I said above, that with the exception of the instincts
hose reason is unknown, you must try to reduce them to first
rinciples, that is to say, to axioms identical or immediate by
neans of definitions, which are nothing else than a distinct
xposition of ideas. I do not doubt even but that your friends,
ho have hitherto been opposed to innate truths, would ap-
rove this method, which appears consonant with their princi-
al aim.

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[1] Chrocus, who with the Sueves and Alans is said to have passed over the
hine near Mayence, and following the evil counsel of his mother, to have
vaged in the most frightful manner in Germany as in Gaul. The story is
ven in the Chronicle of Idatius, chap. 62. *Cf.* Bouquet, *Rerum Gall. et*
ranc. Scriptores, Tom. 2, p. 464. — Tr.

CHAPTER III

OTHER CONSIDERATIONS TOUCHING INNATE PRINCIPLES, BOT SPECULATIVE AND PRACTICAL

§ 3. *Ph.* You wish to reduce truths to first principles, an
I grant you that if there is any such principle, it is withou
gainsaying this; *it is impossible for a thing to be and not t*
be at the same time. It appears, however, difficult to maintai
its innate character, since you must be convinced at the sam
time that the ideas of impossibility and identity are innate.

Th. It is quite necessary that those who favor innate truth
maintain and be convinced that these ideas are also innate, an
I admit that I am of their opinion. The ideas of *being*, o
possibility of *identity*, are so completely innate that the
enter into all our thoughts and reasonings, and I regard the
as essential to our mind; but I have already said that we d
not always pay them particular attention and that we disce
them only with time. I have said hitherto that we are, so t
speak, innate unto ourselves, and since we are beings, the bein
we is innate; and the knowledge of being is wrapped up i
that knowledge which we have of ourselves. There is som
thing similar in the case of other general notions.

§ 4. *Ph.* If the idea of *identity* is natural, and *consequent*
so evident and so present to the mind that we ought to reco
nize it from the cradle, I would be pleased to have a child
seven years, and even a man of seventy, tell me whether a ma
who is a creature consisting of body and soul, is the same (ma
when his body is changed, and whether, metempsychosis su
posed, Euphorbus would be the same as Pythagoras.

Th. I have stated sufficiently that what is natural to us is n
known to us as such from the cradle; and even an idea may
known to us without our being able to decide at once all que
tions which can be formed thereupon. It is as if some one mai
tained that a child cannot have a knowledge of the square a
its diagonal, because he will have difficulty in recognizing th
the diagonal is incommensurable with the side of the squa
As for the question itself, it appears to me demonstrative

olved by the doctrine of Monads, which I have elsewhere[1]
hown in its true light, and we shall speak more fully of this
atter in the sequel.

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[1] *Cf.* the Essay, without title, Gerhardt, 4, 427 *sq.*, written at the beginning
f 1686, and referred to as "un petit discours de Metaphysique," in Leibnitz's
tter, Feb. 1–11, 1686, to the Landgraf Ernst von Hessen-Rheinfels, G. 2, 11.
his 'Discours,' regarded by Leibnitz as the beginning of his philosophy, con-
ins a summary, centring about the idea of *the individual substance*, of all
is previous philosophical speculation. He gained this idea, and with it a
emingly satisfactory solution of the principal philosophical problem, at the
nd of 1685 or the beginning of 1686. For this idea, still in process of devel-
oment, possessing the elements of force and individuality, but lacking those
continuity and perceptive activity evolved between 1686 and 1697, Leibnitz,
1697, when the idea possessed all the elements essential to its completeness
his system, appropriated the term "monad." This term he borrowed, not
om Giordano Bruno, 1548–1600, who used it in a similar though not precisely
e same sense, but from François Mercure Van Helmont, 1618–1699. So far
known, the term "monad" is first mentioned in the letter to Fardella,
ept. 3–13, 1696, first published by Foucher de Careil, *Nouv. lettr. et opusc. de*
eibniz. p. 328, Paris, 1857. The doctrine in substance till 1697, and thereafter
name, Leibnitz frequently set forth with increasing clearness and complete-
ess in letters to his numerous correspondents, and in the "Acta Eruditorum"
d the "Journal des Savans." Reference may be made, among others, to the
llowing: Correspondence with Antoine Arnauld, 1612–1694, especially the
tter dated Venice, Mar. 23, 1690, G. 2, 134; Erdmann, 107; Jacques, 1, 443;
ans., Appendix, ; the two systematic elaborations of his system of
e year 1695, the mathematical in the *Specimen dynamicum pro admirandis*
turæ legibus, etc., Gerhardt, *Leibniz. math. Schrift.*, 6, 234 *sq.*; the meta-
ysical in the *Systeme nouveau de la nature*, etc., G. 4, 477; E. 124; trans.,
ppendix, ; *De ipsa natura*, etc., 1698, espec. §§ 11, 12, G. 4, 504; E. 154;
1, 455 (in French); trans., Appendix, ; *Response* (*Replique*, Erdmann)
x reflexions continues dans la seconde edition du Dictionnaire Critique de
. Bayle, etc., 1702, G. 4, 554; E. 183; trans., Appendix, ; Letters to
ud. Christ. Wagner *De vi activa corporis*, June 4, 1710, G. 7, 528; E. 465;
ans., Duncan, *Philos. Wks. of Leibnitz*, 190; to Bierling, Aug. 12, 1711,
. 7, 500; E. 677; *Principes de la nature*, etc., c. 1714, G. 6, 598; E. 714;
ans., Duncan, 209; *La Monadologie*, 1714, G. 6, 607; E. 705; trans., Duncan,
8, F. H. Hedge, "Jour. Spec. Philos.," Vol. 1, p. 129; Letters to Des Bosses,
. 2, 285 *sq.*, *passim*, which present most penetrating discussions of Leibnitz's
etaphysic and form the most ample commentary on the *Monadologie*; to De
older, 1643–1709, G. 2, 139 *sq.*, *passim*, proving the intimate connection of
eibnitz's dynamic and metaphysic; to Bourguet, Dec. 1714, G. 3, 575; E. 720;
Remond (de Montmort, E. 724), Feb. 11, 1715, §§ 3, 4, G. 3, 635; to Dangi-
urt, Sept. 1716, Dutens, *Leibnit. opera omnia*, 3, 499; E. 745. Of the pieces
ted the most important are: The Letter to Arnauld, Mar. 23, 1690, the *Systeme*
uveau, the *De ipsa natura*, the *Principes de la nature*, and the *Monado-*
gie. As Leibnitz was occupied, more or less as circumstances permitted,
th the composition and revision of his 'New Essays,' from 1700, when Coste's
nslation of Locke's 'Essay' appeared, to 1709 and perhaps later (*vid. ante*,
9 and note), possibly even as late as 1714 or 1716, the relative date of com-
sition of the several pieces here cited to that of the 'New Essays' can easily

§ 6. *Ph.* [I see very well that to you I should object in va
that the axiom which declares that *the whole is greater than*
part is not innate, under pretext that the ideas of whole a
part are relative, dependent upon those of number and exte
sion; since you would apparently maintain that there are ide
conditionally innate, and that those of number and extensi
are to such a degree innate.[1]]

Th. You are right, and indeed I rather believe that the id
of extension is posterior to that of whole and part.

§ 7. *Ph.* [What say you of the truth that God should
worshipped; is it innate?]

Th. I believe that the duty of worshipping God declares t
on occasion you ought to show that you honor him beyo
every other object, and that this is a necessary consequence
the idea of him and of his existence; which signifies with
that this truth is innate.

§ 8. *Ph.* But the atheists seem to prove by their exam
that the idea of God is not innate. And without speaki
of those whom the ancients have mentioned, have not ent
nations been discovered, who have no idea of God nor of t
terms which denote God and the soul, as at the bay of Soldan
in Brazil, in the Caribbee Islands, in Paraguay?

Th. [The late Mr. Fabricius,[2] a celebrated theologian
Heidelberg, has made an apology for the human race in or

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be approximated. On the whole subject, *cf.* L. Stein, *Leibniz u. Spinoza*, cha
pp. 111–219, Berlin: G. Reimer, 1890, who traces the history of the rise of
monad-doctrine from 1680 till all the elements of the complete conception w
present in 1697; E. Dillmann, *E. neue Darstg. d. Leibniz. Monadenlehre*
Grund d. Quellen, Leipzig: O. R. Reisland, 1891, whose monograph is an e
orate discussion of the entire subject with references to or quotations from
the sources. — Tr.

[1] The French text is: "puisque vous soutiendrés apparemment, qu'il y a
idées innées respectives, et que celles des nombres et de l'étendue sont in
aussi." — Tr.

[2] John Lewis Fabricius, 1632–1697. Professor, first of Greek, then of Phi
ophy and Theology, at Heidelberg. In 1664 he received the title of "Conse
ecclésiastique de l'electeur palatin." Some years after, when Heidelberg
burning, he saved the archives of the church and the university, carry
them first to Eberbach, then to Frankfort, where he died. The title of
work referred to in the text (*vid. ante*, p. 21 also, where the name is g
Fabritius, in accord with his own signature in the letter of Feb. 16, 167
Spinoza, offering him the professorship of Philosophy at Heidelberg) is: *A*
ogia generis humani contra calumniam atheismi. It appeared in 1662.
collected works, with a life, were published by J. H. Heidegger, Zurich, 1
in 4to. — Tr.

clear it of the imputation of atheism. He was an author of
eat accuracy, and decidedly above much prejudice; I do not,
wever, pretend to enter into this discussion of facts. I grant
at entire peoples have never thought of the supreme sub-
ince, nor of the nature of the soul. And I remember, that
ien you wished at my request, countenanced by the illus-
ous Mr. Witsen, to obtain for me in Holland a translation of
e Lord's Prayer into the language of Barantola, you were
opped at this point: *hallowed be thy name,* because you
uld not make the Barantoli understand what *hallowed*
eant. I remember also that in the creed made for the Hot-
ntots you were obliged to express Holy Spirit by words of
e country which signify a pleasant and agreeable wind.[1]
is was not unreasonable, for our Greek and Latin words
εῦμα, *anima, spiritus,* mean ordinarily only the air or wind
breathe, as one of the most subtile things which we know
rough the senses; and we begin through the senses to lead
en little by little to what is beyond the senses. All this diffi-
lty, however, which you find in attaining abstract knowledge
ects nothing against innate knowledge. There are peoples
io have no word corresponding to the word *being;* does any
e doubt their knowledge of what being is, although they
dom think of it in the abstract? Besides I find what I
ve read in our excellent author on the idea of God (Essay on
iderstanding, Book I., chap. 3,[2] § 9) so beautiful and so to
liking that I cannot refrain from quoting it.[3] Here it is:
"Men can scarcely avoid having some kind of idea of things
which those with whom they converse often have occasion
speak under certain names, and if the thing is one which
ries with it the idea of excellence, of grandeur, or of some
traordinary quality which interests in some point and which
presses itself upon the mind under the idea of an absolute
l irresistible power which none can help fearing" (I add:
l under the idea of a superlatively great goodness which
ne can help loving), "such an idea ought, according to all

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[1] *Cf.* Book III., chap. 1, § 5, Th. (2). — Tr.

[2] Chap. 4, in Locke's treatise, Bohn's ed. — Tr.

[3] The French translation of Locke's original, is, in my judgment, clearer in
n of statement and style than Locke himself. Hence I have retranslated the
nch into English. If any reader prefers Locke's original, he can easily find
the *Philos. Works,* Bohn's ed., Vol. 1, p. 188. — Tr.

appearances, to make the strongest impression and to spr
farther than any other, especially if it is an idea which acco
with the simplest insight of *reason*, and which flows *natur*
from every part of knowledge. Now such is the idea of G
for the brilliant marks of extraordinary wisdom and po
appear so plainly in all the works of the creation, that ev
rational creature who will reflect thereupon cannot fail to
cover the author of all these marvels; and the impression t
the discovery of such a Being must naturally make upon
souls of all those who have once heard him spoken of is so gr
and carries with it thoughts of so great weight and so adap
to spread themselves in the world, that it appears to me wh
strange that an entire nation of men can be found upon
earth so stupid as to have no idea of God. This, I say, se
to me as surprising as to think of men who should have
idea of numbers or of fire."

I would I might always be allowed to copy word for wo
number of other excellent passages of our author, which we
obliged to pass by. I will only say here, that this autho
speaking of *the simplest lights of reason*, which agree with
idea of God, and of that which naturally proceeds from it,
pears to differ but little from my view of innate truths;
concerning this, that it appears to him as strange that th
may be men without any idea of God, as it would be surpri
to find men who had no idea of numbers or of fire, I will rem
that the inhabitants of the Marian Islands, to which has b
given the name of the Queen of Spain, who has protected
sions there, had no knowledge of fire when they were
covered, as appears from the narrative which Rev. Fa
Gobien,[1] a French Jesuit, charged with the care of dis
missions, has given to the public and sent to me.]

§ 16. *Ph.* If you are right in concluding that the idea
God is innate, from the fact that all enlightened races h
had this idea, virtue ought also to be innate because enlighte
races have always had a true idea of it.

Th. [Not virtue, but the idea of virtue, is innate, and
haps you intend only that.]

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[1] Charles le Gobien, 1653–1708. Professor of Philosophy at Tours; s
tary and procurator of Chinese missionaries; wrote and published a nu
of works on these missions in China; his *Histoire des Isles Mariannes*,
1700, 12mo. — Tr.

Ph. It is as certain that there is a God, as it is certain that e opposite angles made by the intersection of two straight es are equal. And there has never been a rational creature 1o applied himself sincerely to the examination of the truth these two propositions who has failed to give them his con-1t. Nevertheless, it is beyond doubt that there are many n who, having never turned their thoughts in this direction, e ignorant equally of these two truths.

Th. [I admit it; but that does not prevent them from being *ıate* — that is to say, does not prevent you from being able find them in yourself.]

§ 18. *Ph.* It would be more advantageous to have an innate ea of *substance;* but it turns out that we do not have it, her innate or acquired, since we have it neither through ısation nor reflection.

Th. [I am of opinion that reflection suffices to discover e idea of substance within ourselves, who are substances. ıd this notion is one of the most important. But we shall eak of it, perhaps more fully, in the sequel of our con-ence.]

§ 20.[1] *Ph.* If there are innate ideas in the mind without the nd's being actually aware of their presence, they must at st be in the memory, whence they must be drawn by means *reminiscence* — that is to say, be known, when memory re-ls them, as so many perceptions which have been in the nd before, unless reminiscence can subsist without reminis-ıce. For this conviction, where it is an inwardly certain e, that a given idea has previously been in our mind, is perly what distinguishes reminiscence from every other ıd of thinking.

Th. [In order that knowledge, ideas, or truths be in our ıd, it is not necessary that we have ever actually thought of m; they are only natural habitudes; *i.e.* dispositions and itudes, active and passive, and more than a *tabula rasa.* is true, however, that the Platonists believed that we have eady actually thought of that which we recognize in our-ves; and to refute them it is insufficient to say that we do at all remember it, for it is certain that an infinite number

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Gerhardt's reading. So also Locke, *Philos. Works,* Vol. 1, p. 197, Bohn's —Tr.

of thoughts recur to us which we have forgotten that had. It has happened that a man believed he had compose new verse, which it turned out he read word for word a l time previous in some ancient poet. And often we have extraordinary facility of conceiving certain things, because formerly conceived them, without remembering them. It possible that a child, having become blind, forgets ever hav seen light and colors, as happened at the age of two and a h years from small-pox in the case of the celebrated Ulric Scho berg, a native of Weide, in the Upper Palatinate, who died Königsberg, in Prussia, in 1649, where he taught philoso and mathematics to the admiration of every one. It may that such a man has remaining effects of former impressi without remembering them. I believe that dreams often t revive in us former thoughts. Julius Scaliger,[1] having c brated in verse the illustrious men of Verona, a certain s styled Brugnolus, a Bavarian by birth, but afterward est lished at Verona, appeared to him in a dream and complai that he had been forgotten. Julius Scaliger, not remember to have heard him spoken of before, did not allow himself make elegiac verses in his honor in consequence of this dre At length, the son, Joseph Scaliger,[2] travelling in Italy, lear more particularly that there had been formerly at Veron celebrated grammarian or learned critic of this name, who contributed to the re-establishment of polite literature in It This story is found in the poems of Scaliger the father, gether with the elegy, and in the letters of the son. I related also in the "Scaligerana,"[3] which are culled from nversations of Joseph Scaliger. It is very likely that Julius aliger had known something of Brugnol which he no longer nembered, and that the dream was partly the revival of a rmer idea, although he may not have had that *reminiscence,* operly so called, which makes us know that we have already d this same idea; at least, I see no necessity which obliges to assert that there remains no trace of a perception when ere is not enough of it to remind us that we have had it.]

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[1] Julius Cæsar Scaliger, 1484–1558. His Latin verse appeared in succe volumes in 1533, 1534, 1539, 1546, 1574. His tastes were, however, philos cal and scientific rather than literary. His scientific works, in the for commentaries, have only a historical interest. The *Exotericarum exercit num liber*, Paris, 1557, 4to, a philosophical treatise on the *De Subtilitate,* of Cardan (*vid. ante*, p. 67, note 1), is the work which best makes kn Scaliger as a philosopher. It was a popular text-book until the final f Aristotle's physics. — Tr.

[2] Joseph Justus Scaliger, 1540–1609, reputed the greatest scholar of mo times. He was the first to set forth and apply sound principles of te criticism and emendation in his editions of some of the classical authors, with him arose a new school of historical criticism. He reconstructed th Chronicle of Eusebius, a work of considerable importance in the stu ancient history. — Tr.

[3] Two collections of anecdotes concerning Joseph Scaliger, numbered ac

§ 24. *Ph.* [I must admit that your reply is natural enough the difficulties which we have framed against innate truths. rhaps, also, our authors do not contest them in the sense in ich you maintain them. Thus I return only to say to you, sir] t we have had some reason to fear that the view of innate ths serves as a pretext for laziness, for exempting ourselves m the trouble of research, and gives opportunity to masters l teachers to lay down as a *principle of principles* that nciples must not be questioned.

Th. [I have already said that if it is the aim of your friends advise the search for the proofs of the truths which y can receive, without distinguishing whether or not they innate, we are entirely agreed; and the view of innate ths, of the manner in which I take them, should deter no one n such search, for, besides being well to seek the reason of *instincts,* it is one of my great maxims that it is good to k demonstrations of the *axioms* also, and I remember that Paris, when the late Mr. Roberval,[1] already an old man, was

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to their date of composition. The first was written in Latin by François unien, a friend of Scaliger, who took notes of his conversations with iger, especially of all criticisms or anecdotes worthy of preservation, and rwards wrote them out. An advocate, François de Sigogne, bought the long after the author's death, and published it at Saumer in 1669. The nd was written in French and Latin by two youths named Vassan, who, n students at Leyden, habitually conversed after supper with Scaliger, then essor of Belles Lettres there, and on their return to their rooms wrote out ney could remember of his conversation. Their MS. was finally published a Haye, 1666, by Isaac Vossius. The edition of the *Scaligerana,* accounted best, is that of 1740, 12mo. The story is told at length, and the Elegy of lder Scaliger cited, in the Cologne ed. of the *Scaligerana,* 1695, pp. 69– -TR.

[1] Gilles Personne de Roberval, a French geometer, born 1602, at Roberval, a l village of Beauvais, died 1675 at Paris. He was Professor of Mathematics e Royal College of France for many years. One of the conditions of the re of this chair was that its holder should propose mathematical questions olution, and resign in favor of any one solving them better than himself.

laughed at because he wished to demonstrate those of Eucl after the example of Apollonius[1] and Proclus,[2] I illustrated t utility of this investigation. As for the principle of tho who say that it is wholly unnecessary to argue against the o who denies principles, it has no authority whatever in regard these principles which can admit neither doubt nor proof. is true that, in order to avoid scandal and disturbance, regu tions may be made regarding public disputations and so other lectures, in virtue of which the discussion of certa established truths may be prohibited. But this is rather question of police than of philosophy.]

Roberval kept the chair till his death. He is best known for his origi method for the construction of tangents. — Tr.

[1] Apollonius of Perga, born probably about 250 B.C., died in the reign Ptolemy Philopater, 222–205 B.C. Next to Archimedes, he was the most no of the Greek geometers. His fame has been transmitted to modern ti chiefly by his treatise on the Conic Sections, the best edition of which, and only one containing the Greek text that has yet appeared, is: *Apoll pergaei conicorum libri octo*, etc., ed. Halley: Oxford, 1710, folio. He was first to show that all three of the conic sections can be cut from the same c by changing the position of the intersecting plane. — Tr.

[2] Proclus Diadochus, 410–485, "the great schoolman of Neo-Platonism," doctrines of which received at his hands the final form in which they h come down to us. He came to Athens in his twentieth year, and remai there teaching and writing till his death. Among his writings now extant a Treatise on the Sphere, Commentaries on Euclid, and on several of Pla dialogues, and the wholly independent works Στοιχείωσις Θεολογική, or *Instit of Theology*, and the six books εἰς τὴν Πλάτωνος Θεολογίαν, or *Platonic Theol* His philosophical work is found for the most part in the Commentaries on Pl For his mathematical work, cf. *In primum Euclidis Elementorum lib Commentarii*, ex recognitione G. Friedlein: Lipsiæ, 1873; also George Johns Allman, *Greek Geometry from Thales to Euclid*, Dublin: University Pr 1889; and in "Hermathena," a series of papers on literature, science, and losophy, by members of Trinity College, Dublin, Nos. 5, 7, 10–13, Dublin: 1 1881, 1884–1887. For his philosophy, cf. Zeller, *Die Philos. d. Griech.*, 3d 1881, Vol. 3, pp. 774 *sq.*, and *Outlines*, § 101; Hegel, *Gesch. d. Philos.*, 2d Vol. 3, pp. 61–79; Alfred William Benn, *The Greek Philosophers*, Vol. 2, p 358–360, London: Kegan Paul, Trench, & Co., 1882. The *Philosophical Mathematical Commentaries on the First Book of Euclid's Elements*, were translated by Thomas Taylor, London, 1792, 2 vols. in 1, 4to. — Tr.

qu'à l'égard
principes qui
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ed.)

EW ESSAYS ON HUMAN UNDERSTANDING

Book II. — Ideas

CHAPTER I

HICH TREATS OF IDEAS IN GENERAL, AND EXAMINES BY THE WAY WHETHER THE MIND OF MAN ALWAYS THINKS

§ 1. *Ph.* Having examined the question of innate ideas, let consider their nature and their differences. Is it not true at the *idea* is the object of thought?

Th. [I admit it, provided you add that it is an immediate ternal object, and that this object is an expression of the na-re or the qualities of things. If the idea were the *form* of ought, it would spring up and cease with the actual thought which it corresponds; but being the *object* it may exist pre-ous to and after the thoughts. External sensible objects are ly *mediate* because they cannot act immediately upon the ul.[1] God alone is the *external immediate* object. We might that the soul itself is its own immediate *internal* object; t it is this in so far as it contains ideas, or what corresponds things. For the soul is a little world,[2] in which distinct as are a representation of God, and in which confused ideas a representation of the universe.]

§ 2. *Ph.* We who suppose that at the beginning the soul is a *ula rasa*, void of all characters and without an idea, ask how comes to receive ideas, and by what means it acquires this

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Cf. Book IV., chaps. 9 and 11. The opposition here set up between mediate immediate knowledge corresponds to Kant's *a posteriori* and *a priori* wledge. — Tr.

Microcosm. — Tr.

prodigious quantity of them? To that question the reply in a word is: From experience.

Th. [This *tabula rasa*, of which so much is said, is in my opinion only a fiction which nature does not admit, and whic is based only upon the imperfect notions of philosophers, lik the vacuum, atoms, and rest, absolute or relative, of tw parts of a whole, or like the primary matter[1] which is conceived as without form. Uniform things and those which contain no variety are never anything but abstractions, like tim space, and the other entities of pure mathematics. There is n body whatever whose parts are at rest, and there is no substance whatever that has nothing by which to distinguish from every other. Human souls differ, not only from othe souls, but also among themselves, although the difference not at all of the kind called specific. And, according to th proofs which I believe we have, every substantial thing, be soul or body, has its own characteristic relation to every othe and the one must always differ from the other by *intrins* *connotations.* Not to mention the fact that those who spea so frequently of this *tabula rasa* after having taken away t ideas cannot say what remains, like the scholastic philos phers, who leave nothing in their primary matter.[1] Y may perhaps reply that this *tabula rasa* of the philosophe means that the soul has by nature and originally only bare fa ulties. But faculties without some act, in a word the pu powers of the school, are also only fictions, which natu knows not, and which are obtained only by the process of a straction. For where in the world will you ever find a facul which shuts itself up in the power alone without performi any act? There is always a particular disposition to acti and to one action rather than to another. And besides t disposition there is a tendency to action, of which tendenc there is always an infinity in each subject at once; and th tendencies are never without some effect. Experience is n essary, I admit, in order that the soul be determined to su or such thoughts, and in order that it take notice of the id which are in us; but by what means can experience and senses give ideas? Has the soul windows, does it resem tablets, is it like wax? It is plain that all who so regard soul, represent it as at bottom corporeal. You oppose to me this axiom received by the philosophers, *that there is nothing in the soul which does not come from the senses.* But you must except the soul itself and its affections. *Nihil est in intellectu, quod non fuerit in sensu,* excipe: *nisi ipse intellectus.* Now the soul comprises being, substance, unity, identity, cause, perception, reason, and many other notions which the senses cannot give. This view sufficiently agrees with your author of the Essay, who seeks the source of a good part of ideas in the spirit's reflection upon its own nature.

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[1] *Materia Prima.*—Tr.

Ph. [I hope, then, that you will agree with this skilful author that all ideas come through sensation or through reflection, that is to say, from observations which we make either upon objects exterior and sensible or upon the inner workings of our soul.

Th. [In order to avoid a discussion upon what has delayed us too long, I declare to you in advance, sir, that when you say that ideas come to us from one or the other of these causes, I understand the statement to mean their actual perception, for I think I have shown that they are in us before they are perceived so far as they have any distinct character.

§ 9. *Ph.* [In the next place let us inquire when we must ay that the soul begins to perceive and actually to think of deas. I well know that there is an opinion which states that he soul always thinks, and that actual thought is as inseparable rom the soul as actual extension is from the body. § 10. But cannot conceive that it is any more necessary for the soul lways to think than for the body always to be in motion, perception of ideas being to the soul what movement is to the ody. That appears to me very reasonable at least, and I would gladly know your view, sir, thereupon.

Th. You have stated it, sir. Action is no more connected with the soul than with the body, a state without thought in he soul and an absolute repose in the body appearing to me qually contrary to nature, and without example in the world. substance once in action, will be so always, for all the impressions remain and are merely mingled with other new ones. triking a body, we arouse therein or determine rather an nfinite number of vortices as in a liquid, for at bottom every olid has a degree of liquidity and every liquid a degree of solidity, and there are no means of ever stopping entirely these internal vortices. Now we may believe that if the body is never at rest, the soul, which corresponds to it, will never be without perception either.]

Ph. But it is, perhaps, a privilege of the author and conserver of all things, that being infinite in his perfections, he never slumbers nor sleeps. This is not granted to any finite being, or at least not to such a being as is the soul of man.

Th. [It is certain that we slumber and sleep, and that God is exempt from both. But it does not follow that we have no perception while asleep. Rather just the contrary is found to be the case, if we consider it carefully.]

Ph. There is something in us which has the power to think; [but it does not thereby follow that it is always in action.]

Th. [Real powers are never simple possibilities. They have always tendency and action.

Ph. But this proposition — the soul always thinks — is not self-evident.

Th. I do not say it is. A little attention and reasoning is necessary to discover it; the common people perceive it as little as they do the pressure of the air or the roundness of the earth.]

Ph. I doubt if I thought last night; this is a question of fact, it must be decided by sensible experiences.

Th. [It is decided as it is proved, that there are imperceptible bodies and invisible movements, although certain persons treat them as absurd. There are also numberless perceptions little noticed which are not sufficiently distinguished to be perceived or remembered, but they become known through certain consequences.]

Ph. There was a certain author who raised the objection that we maintain that the soul ceases to exist, because we are not sensible of its existence during our sleep. But this objection can arise only from a strange prepossession, for we do not say that there is no soul in man because we are not sensible of its existence during our sleep, but only that man cannot think without being aware of it.

Th. [I have not read the book which contains this objection but it would not have been wrong merely to object to you tha it does not follow because the thought is not perceived, that i ceases for that reason; for otherwise it could be said for th same reason that there is no soul during the time in which it is not perceived. And to refute this objection it is necessary to point out in particular the thought that it is essential to it that it be perceived.]

§ 11. *Ph.* It is not easy to conceive that a thing can think and not be conscious that it thinks.

Th. There is, doubtless, the knot of the affair and the difficulty which has embarrassed able men. But here are the means of extricating ourselves therefrom. We must consider that we think of many things at a time, but we attend only to the thoughts which are most distinct, and the process cannot go on otherwise, for if we should attend to all, we would have to think attentively of an infinite number of things at the same time, all of which we feel and which make an impression upon our senses. I say even more: there remains something of all our past thoughts, and none can ever be wholly effaced. Now when we sleep without dreaming and when we are stunned by some blow, fall, symptom, or other accident, an infinite number of minute confused sensations take form within us, and death itself can produce no other effect upon the souls of animals, who ought, doubtless, sooner or later, to acquire distinct perceptions, for all goes on in an orderly way in nature. I admit, however, that in this state of confusion, the soul would be without pleasure and without pain, for these are noticeable perceptions.

§ 12. *Ph.* Is it not true that those with whom we have at present to do, [*i.e.* the Cartesians, who believe that the soul always thinks,] grant life to all animals, differing from man, without giving them a soul which knows and thinks; and that these same (Cartesians) find no difficulty in saying that the soul can think independently of a body?

Th. [For myself, I am of another opinion, for although I agree with the Cartesians in their affirmation that the soul thinks always, I am not agreed with them in the two other points. I believe that the beasts have imperishable souls and that human and all other souls are never without some body. I hold also that God alone, as being an *actus purus*, is wholly exempt therefrom.]

Ph. If you had been of the opinion of the Cartesians, I should have inferred therefrom, that the bodies of Castor or Pollux could be sometimes with, sometimes without a soul, though being always alive, and the soul having the ability also to be sometimes in one body and sometimes elsewhere, we might suppose that Castor and Pollux had only a single soul, which was active alternately in the body of these two men sleeping and awake by turns; thus it would be two persons as distinct as Castor and Pollux could be.

Th. I, in my turn, will make you another supposition, which appears more real. Is it not true that we must always admit that after some interval or some great change, one may fall into a state of general forgetfulness? Sleidan[1] (they say), before his death, forgot all he knew; and there are many other examples of this sad event. Suppose that such a man became young again and learned all anew, will he be another man on that account? It is not then memory which, properly speaking, makes the same man. Nevertheless, the fiction of a soul which animates different bodies in turn, without concerning itself in one of these bodies with that which happens to i in the other, is one of those fictions contrary to the nature o things which arise from the imperfect notions of philosophers as space without body and body without motion, and which disappear when one penetrates a little deeper; for you must kno that each soul preserves all its preceding impressions, and cannot divide itself equally in the manner just mentioned; the future in each substance is perfectly united to the past; this is what constitutes the identity of the individual. Memory, furthermore, is not necessary, nor even always possible, because of the multitude of present and past impressions which co-operate in our present thoughts, for I do not believe that there are in man thoughts of which there is not some effect at least confused or some remnant mixed with subsequent thoughts. We can forget many things, but we could also remember them long after if we would recall them as we ought.

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[1] John Sleidan, original name Philipsohn, c. 1506–1556, the annalist of th Reformation. He was secretary for five years from 1536 to Cardinal du Bella minister of Francis I. of France. He was wont to copy all documents bearin upon the Reformation to which he had access, and upon the suggestion Bucer to Philip of Hesse, after some delay was appointed, with the conse of the heads of the Schmalkaldic League, historian of the Reformation, with salary and access to all necessary documents. He finished the first volume his great work in 1545. His work was then interrupted by a diplomatic mi sion in a French embassy to Henry VIII. of England. While there he improv every opportunity to collect materials for his history. In 1551 he was a me ber of the Council of Trent for Strassburg. On his return he was made Pr fessor of Law at Strassburg, a position which enabled him to devote his wh attention to his great work. It was finished for the press in 1554, and publish at Strassburg in 1555. It is entitled: *Commentariorum de statu religionis reipublicæ Carolo Quinto, Cæsare, libri XXVI.* The ed. of 1555 contain only 25 books; that of 1559 the 26th and an apology of Sleidan, written himself. The best edition is that of Francfort, 1785–86, 3 vols., 8vo. The wo is "the most valuable contemporary history of the times of the reformati and contains the largest collection of important documents." It is especia noteworthy for its accuracy, impartiality, and purity of style. There are t English translations, by John Daws, 1560, and G. Bohum, 1689. There also translations in other languages. *Cf.* H. Baumgarten, *Ueber Sleida Leben und Briefwechsel*, 1878; *Sleidans Briefwechsel*, 1881. — TR.

§ 13. *Ph.* Those who chance to sleep without dreaming can never be convinced that their thoughts are active.

Th. [One is feebly conscious in sleep, even when it is dreamless. The process of waking up itself shows this, and the easier you are awakened the more you are conscious of what goes on without, although this consciousness is not always strong enough to cause you to awake.]

§ 14. *Ph.* It appears very difficult to conceive that the soul is thinking at this moment in a sleeping man and the next in one awake, without remembering its thoughts.

Th. [Not only is that easy to conceive, but also something like it is observed every day that we are awake; for we always have objects which strike our eyes and ears, and, as a result, the soul is touched also, without our taking notice of it, because our attention is bent upon other objects, until this object becomes strong enough to draw it to itself, by redoubling its action or by some other means; it is like a particular sleep with reference to that object, and this sleep becomes general when our attention ceases to regard all objects together. Division of attention, in order to weaken it, is also a means of putting yourself to sleep.]

Ph. I learned from a man, who in his youth had applied himself to study and had a tolerably felicitous memory, that he never had a dream until he had had the fever, from which he had just recovered at the time he spoke with me, at the age of twenty-five or twenty-six years.

Th. [I have also been told of a student, more advanced in years, who never had a dream. But it is not upon dreams alone that you must base the perpetuity of the soul's perception, since I have shown how, even while asleep, it has some perception of what goes on without.]

§ 15. *Ph.* To think frequently and not to preserve a singl moment the memory of your thought, is to think in a useles manner.

Th. [All impressions have their effect, but all the effects ar not always perceptible; when I turn to one side rather than t the other, it is very often through a series of minute impression of which I am not conscious, and which render one movemen a little more uncomfortable than the other. All our unpr meditated actions are the results of a concurrence of minut perceptions, and even our customs and passions, which infl ence so much our deliberations, come therefrom; for thes habits grow little by little, and, consequently, without th minute perceptions, we should not arrive at these noticeable di positions. I have already remarked that he who would den these effects in the sphere of morals, would imitate the poorl taught class who deny insensible corpuscles in physics; an yet I see that among those who speak of liberty are some wh taking no notice of these unperceived impressions, capable inclining the balance, imagine an entire indifference in mor actions, like that of the ass of Buridan[1] equally divided betwee two meadows. Concerning this we shall speak more full later. I admit, however, that these impressions incline wit out necessitating.

Ph. Perhaps we might say that in the case of a man awak who thinks, his body counts for something and that memor is preserved by means of marks in the brain, but when he asleep the soul thinks apart by itself.

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[1] John Buridan, a celebrated Nominalist of the 14th century, the date whose birth and death is unknown. He studied at Paris under William Occam (died 1347) and was for many years Professor of Philosophy in t University of Paris, and in 1327 its rector. In philosophy his only authori was reason. In the third book, first question, of his *Quæstiones in decem libr ethicorum Aristotelis*, 1489, he discussed in an "independent and interesti manner" the question of the freedom of the will, reaching conclusions simil to those of Locke. In his view the liberty possessed by the soul consists "a certain power of suspending the deliberative process, and determining t direction of the intellect; otherwise the will is entirely dependent on the vie of the mind, the last result of examination." The story of the ass as an ill tration of the indeterminism of the will "is not," as Sir William Hamilt says (Reid, 8th ed., Vol. 1, p. 238, note) he has ascertained, "to be found his writings." On Buridan, *cf.* Ueberweg, *Hist. of Philos.*, English transl tion, Vol. 1, pp. 465–466; Prantl, *Gesch. d. Logik*, Vol. 4, 14–38; Stöckl, *Gesc d. Philos. d. Mittelalters*, Vol. 2, 1023–1028. — Tr.

Th. I am very far from saying that, since I believe there s always an exact correspondence between the body and he soul, and since I employ the impressions of the body f which we are not conscious, whether awake or asleep, in rder to prove that the soul has in itself similar ones. I aintain even that something goes on in the soul which coresponds to the circulation of the blood and to all the internal ovements of the viscera, of which we are never conscious owever, just as those who live near a water-mill do not pereive the noise it makes. In fact, if there were impressions n the body during sleep or waking hours, by which the soul as not touched or in any wise affected, limits would be given o the union of the soul and of the body, as if corporeal mpressions required a certain form and size in order for the oul to perceive them; which is not at all tenable if the soul s incorporeal, for there is no relation between an incorporeal ubstance and this or that modification of matter. In a ord, it is a great source of error to believe that there is no erception in the soul besides those of which it is concious.

§ 16. *Ph.* The greater part of the dreams which we rememer are extravagant and incoherent. We should then say that he soul owes the power of rational thought to the body, or hat it retains none of its rational soliloquies.

Th. [The body responds to all the soul's thoughts, rational r not, and dreams have also their marks in the brain as well s the thoughts of those who are awake.

§ 17. *Ph.* Since you are so sure that the soul is always ctually thinking, I wish you would tell me what the ideas re which are in the child's soul before it is united to the body, r just at the time of its union, before it has received any idea y means of sensation.

Th. It is easy to satisfy you by our principles. The soul's erceptions correspond always naturally to the constitution of e body, and when there are a multitude of movements consed and little distinguished in the brain, as happens in the se of those who have little experience, the soul's thoughts ollowing the order of the things) cannot be more distinct. Yet e soul is never deprived of the help of *sensation*, because it ways expresses its body, and this body is always impressed by its surroundings[1] in an infinite number of ways, but whic often give only a confused impression.

§ 18. *Ph.* But here is still another question which th author of this Essay asks. I very much wish (says he) th those who maintain so confidently that the soul of man (what is the same thing) man thinks always, would tell n how they know it?

Th. [I do not know but that more confidence is necessary deny that anything goes on in the soul of which we are n conscious; for that which is perceivable must be composed parts which are not so, nothing can spring into being at onc thought no more than motion. In short, it is as if some o asked to-day how we know the insensible corpuscles.

§ 19. *Ph.* I do not remember that those who tell us th the soul always thinks ever say that man always thinks.

Th. [I think that is because they understand their stat-ment of the separated soul, and yet they voluntarily admit th man always thinks during the union. For myself, who ha reasons for holding that the soul is never separated from th entire body, I believe that we can state absolutely that m always does and will think.]

Ph. To say that the body is extended without having par and that a thing thinks without being conscious that it thinl are two assertions which appear equally unintelligible.

Th. [Pardon me, sir; I am obliged to tell you that wh you advance the statement that there is nothing in the soul which it is not conscious, you beg the question which has ready prevailed in all our former discussion, or you have be desirous to use it to destroy innate ideas and truths. If agree to this principle, in addition to the fact that we belie it contrary to experience and reason, we should surrender wi-out reason to our feeling, which, I believe, I have render sufficiently intelligible. But besides the fact that our op-nents, skilful as they are, have brought no proof of that wh they urge so often and so positively, it is easy to show th the contrary; *i.e.* that it is impossible for us always to thi xpressly upon all our thoughts; otherwise, the spirit would eflect upon each reflection to infinity without ever being able pass to a new thought. For example, in my consciousness f some present feeling, I should always think that I think, nd still think that I think of my thought, and thus to infinity. ut it is very necessary that I cease reflecting upon all these eflections, and that there be at length some thought which is llowed to pass without thinking of it; otherwise, we should well always upon the same thing.]

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[1] Gerhardt reads: "frappé par les ambians d'une infinité de manières, m qui souvent ne donnent qu'une impression confuse." Erdmann and Jac read: "frappé par les autres, qui l'environnent, d'une infinité de manie mais qui souvent ne font qu'une impression confuse." — Tr.

Ph. But would there not be as good ground for maintaining at a man is always hungry, by saying that he can be hungry ithout feeling it?

Th. There is just the difference; hunger has particular reans which do not always exist. Nevertheless, it is true also at even when you are hungry you do not think of it every oment; but when you do think of it you feel it, for it is a ry marked disposition; there is always irritation in the omach, but it is necessary for it to become very strong to use hunger. The same distinction ought always to be made tween thoughts in general and remarkable thoughts. Thus, at appears to put a ridiculous construction upon our opinion, rves to confirm it.]

§ 23. *Ph.* One can now ask, when man begins to have ideas his thought? And it seems to me that the reply must be, en he has some sensation.

Th. [I am of the same opinion; but it is by a principle a tle peculiar, for I believe that we are never without thoughts, d also never without sensation. I distinguish only between as[1] and thoughts; for we always have all pure or distinct as independently of the senses; but thoughts always corre- ond to some sensation.]

§ 25. But the mind is passive only in the perception of ple ideas, which are the rudiments or materials of knowl- ge, while it is active when it forms complex ideas.

Th. [How can it be that the mind is passive merely with ard to the perception of all simple ideas, since, accord- to your own admission, there are simple ideas whose perception comes from reflection, and since the mind[1] gives its thoughts from reflection, for it is itself which reflect Whether it can refuse them is another question, and doubtl it cannot (refuse them) without some reason, which turns aside from them, when there is some occasion for it.]

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[1] Gerhardt reads: "Je distingue seulement entre les idées et les pensées"; mann and Jacques read: "Je distingue seulement entre sensations et sées." — Tr.

Ph. [It seems that hitherto we have discussed *ex profes* Now that we are going to come to the detail of ideas, I ho that we shall be more agreed, and that we shall differ only some particulars.]

Th. [I shall be delighted to see able men adopting t views which I hold to be true, for they are adapted to impro them and to show them in a good light.]

CHAPTER II

SIMPLE IDEAS

§ 1. *Ph.* I hope then that you will admit that there a simple and complex ideas; thus heat and softness in wax, a cold in ice, furnish simple ideas, for the soul has a unifo conception of them, which is not distinguishable into differe ideas.

Th. [I believe that we can affirm that these sense-ideas a simple in appearance, because, being confused, they do not g the mind the means of distinguishing their contents. In li manner distant things appear round, because their angles ca- not be discerned, although some confused impression of th is received. It is manifest, for example, that green aris from a mixture of blue and yellow; thus it is possible believe that the idea of green is also composed of these t ideas. And yet the idea of green appears to us as simple a that of blue or that of warmth. So we are to believe that ideas of blue and warmth are not as simple as they appear. I readily consent, however, to treat these ideas as simple ide because at least our apperception does not divide them, but necessary to proceed to their analysis by means of other periences and by reason, in proportion as they can be renred more intelligible.[1] And it is also seen thereby that ere are perceptions of which we are not conscious. For the rceptions of ideas simple in appearance are composed of perptions of the parts of which these ideas are composed, witht the mind's being conscious of them, for these confused ideas pear simple to it.]

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[1] Gerhardt reads: "et que l'esprit se donne"; Erdmann and Jacques re "et qu'au moins l'esprit se donne," and since the mind at least gives its — Tr.

CHAPTER III

OF IDEAS WHICH COME TO US BY ONE SENSE ONLY

Ph. Now we can arrange simple ideas according to the eans by which we perceive them, for that is done, 1, by eans of one sense only; 2, by means of more than one sense; by reflection, or 4, by all the ways[2] of sensation as well as reflection. Thus of those which enter by a single sense ich is particularly adapted to receive them, light and colors ter only by the eyes; all kinds of noises, sounds, and tones ter by the ears; the different tastes by the palate; and odors the nose. These organs or nerves carry them to the brain, d if any one of these organs chance to be disordered, these isations cannot be admitted by any artificial gate. The st considerable qualities belonging to the touch are cold, at, and solidity. The others consist either in the configuran of the sensible parts, as smooth and rough, or in their ion, as compact, hard, soft, brittle.[3]

Th. [I quite agree, sir, with what you say, although I may nark that, according to the experiment of the late M. riotte[4] upon the defect of vision with regard to the optic nerve, it seems to me that the membranes receive the sen tion rather than the nerves, and there is an irregular e trance for the hearing and the taste, since the teeth and t *vertex* assist in causing any sound to be heard, and that tast make themselves known to some extent through the nose, reason of the connection of these organs. But all that mak no change in the foundation of things as regards the expli tion of ideas. As for the qualities belonging to touch, y can say that smoothness or roughness, hardness or softne are only modifications of resistance or solidity.]

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[1] Erdmann's and Jacques's texts of chap. 2 end here; Gerhardt's text adds following: "Et l'on voit encor par là qu'il y a des perceptions dont on ne perçoit point. Car les perceptions des idées simples en apparence sont posées des perceptions des parties dont ces idées sont composées, sans que prit s'en apperçoive, car ces idées confuses luy paroissent simples." — Tr.

[2] Locke's expression. *Philos. Works*, Vol. 1, p. 227, Bohn's ed. — Tr.

[3] Locke uses these forms, instead of the more common abstract forms endin -ness. Hence I have used them in the translation. — Tr.

[4] Edme Mariotte, a celebrated French physicist, born about 1620, died 1684. was in some sense the initiator of experimental physics in France. The eriment here referred to, and the resulting discovery of the blind spot at

CHAPTER IV

OF SOLIDITY

§ 1. *Ph.* You will doubtless agree that the idea of solidi is caused by the resistance we find in a body to the e trance of another body into the place it occupies until it h left it. That which thus hinders the approach of two bod when they are moved one toward another I call solidity. any one finds it more to the purpose to call it *impenetrabilit* give my consent. But I believe that the term solidity be a more positive character. This idea seems most intimat connected with and essential to body, and can be found o in matter.

Th. It is true that we find resistance in touch, when anoth body reluctantly gives place to our own, and it is also tr that bodies dislike to occupy the same place. Many, ho ever, doubt whether this repugnance is invincible, and it is w also to consider that the resistance which is found in matter derived in more than one way and by means of reasons qu different. A body resists another either when it must le the place which it has already occupied, or when it fails enter the place into which it was ready to enter, because t other tries to enter also, in which case it may happen that, t one not yielding to the other, they stop or mutually repel ea

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the entrance of the optic nerve, was made in 1668. An account of it is gi in a short paper in the second volume of his collected works. *Œuvres* *Mariotte*, 2 vols., Leyden: 1717, 4to.—Tr.

ther. The resistance is seen in the change of that (body) to hich resistance is offered, whether it loses its force, changes s direction, or both happen at once. Now you can say in eneral that this resistance arises from the repugnance which wo bodies have to occupy the same place, which may be alled impenetrability. Thus when one body makes an effort enter, it at the same time forces the other to attempt to ave or to prevent its entrance. But that kind of incompatiility which makes one or the other, or both together, yield, eing once assumed, there are several reasons besides the one amed which make one body resist another which endeavors compel its departure. They are either in it or in the neighoring bodies. There are two which are in itself; one is pasve and constant, the other active and variable. The first is hat I call *inertia*,[1] after Kepler[2] and Descartes, which impels atter to resist motion, and which it is necessary to destroy y force in order to move a body, supposing that there were either gravity nor adhesion. Thus a body which undertakes drive forward another, experiences for that reason this restance. The other cause, which is active and variable, consts in the impetuosity of the body itself, which does not eld without resistance at the moment its own impetuosity rries it into a place. The same reasons reappear in the eighboring bodies when the body which resists is unable to eld without causing the others to yield also. But then a ew consideration comes in — viz.: *compactness* (*fermeté*) or e adhesion of one body to another. This adhesion[3] makes impossible to move one body without at the same time movg the other to which it adheres, and this causes a kind of *action* in reference to this other. This adhesion so acts that, en should we put aside inertia and manifest impetuosity, ere would be resistance; for if space is conceived as filled ith matter perfectly fluid, and if a single hard body were aced within it, this hard body (supposing there were in the uid neither inertia nor impetuosity) will be moved therein ithout finding any resistance; but if space were full of little

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[1] Gerhardt reads "incertie"; evidently an error. — TR.

[2] John Kepler, 1571–1630, one of the creators of modern astronomy. His mplete works were edited by Dr. Ch. Frisch, *Joannis Kepleri opera omnia*, ols., Frankfort: 1858–1871. — TR.

[3] Erdmann and Jacques add "souvent," often. — TR.

cubes, the resistance which the hard body would find, shou
it be moved among the cubes, would come from the fact th
the little hard cubes, on account of their hardness or becau
of the adhesion of their parts one to another, would with di
culty be separated as much as would be necessary to make
circle of movement, and to fill up the place of the body mov
at the moment it departs. But if two bodies should enter
the same time by the two ends into a tube open on both sid
and should fill it to its capacity, the matter in this tube, ho
ever fluid it be, would resist by its impenetrability alo
Thus, in the resistance of which we are here treating, we ha
to consider the impenetrability of bodies, inertia, impetuosi
and adhesion. It is true that, in my opinion, this adhesion
bodies arises from a more subtile motion of one body towa
another; but, as this is a point which may be disputed, it mu
not be assumed at first. And for the same reason we mu
only assume at first an original, essential solidity, which mal
the place always equal to the body, that is to say that the
compatibility, or, to speak more accurately, the *non-consisten*
of bodies in the same place is a perfect impenetrability whi
receives neither more nor less, since many maintain that *sen*
ble solidity can arise from a repugnance on the part of bod
to be found in the same place, but which will not prove to
an invincible repugnance. For all the ordinary Peripatet
and many others believe that the same matter can fill more
less space, which phenomenon they call rarefaction or cond
sation, not in appearance only (as when water is squeezed fr
a sponge), but rigorously, like the scholastic conception of
air. I am not of this opinion; but I do not think that I oug
at first to assume the opposite opinion, the senses, apart fr
the reasoning faculty, not sufficing to establish this perfect i
penetrability, which I hold to be true in the order of natu
but which is not learned by sensation alone. And some o
may claim that the resistance of bodies to compression ari
from an effort of the parts to spread themselves when th
have not their entire liberty. For the rest the eyes
greatly in proving these qualities, coming to the assistance

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[1] Leibnitz's word is "l'inconsistence," and, as it is apparently technic,
have decided to transfer it, merely changing the form of the negative *in*
non- to avoid ambiguity. — Tr.

uch. And at bottom solidity, so long as it presents a dis-nct idea, is conceived by pure reason, although the senses irnish the reasoning faculty with the proof that it is in ature.

§ 4. *Ph.* We are at least agreed that the *solidity* of a body irries with it the filling of the space it occupies in such a ay as absolutely to exclude every other body [if a space can e found in which there was none before], while *hardness* [or ie consistence rather which some call compactness (*fer-eté*)], is a strong union of certain parts of matter, which ake up masses of a sensible size, so that the whole mass does ot easily change its form.

Th. [This consistence, as I have already remarked, is pre-sely what makes it difficult to move one part of a body with-it the other, so that when one part is pushed, the other, hich is not pushed, and which does not fall within the line tendency, is nevertheless induced to go from that side by a ind of *traction;* and, further, if this last part finds any obsta-e which holds or pushes it back, it draws it along, or holds ick, also, the first part; and this action is always reciprocal. he same thing sometimes happens in the case of two bodies hich do not touch and which do not form a continuous body hose parts are contiguous; and yet, the one pushed compels ie other to go without pushing it, so far as the senses can ve us knowledge. Of this the animant,[1] electrical attraction, and that which was formerly ascribed to the fear of a vacuum furnish examples.]

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[1] See Krauth-Fleming, *Vocab. Philos. Sciences*, pp. 28, 29, and 571, edition 1877, New York: Sheldon & Co., 1883. The *animant* is that which pos-sses and imparts life. Together with its cognates *animality*, *animalish*, *imalist*, used frequently by Cudworth. See *Intell. Syst.*, 514, "*Ut sit nimans*, that it be Animant, or endued with Life, Sense, and Understand-g." *Ibid.*, 198. "But no Atheist ever acknowledged conscious *animality* be a first principle in the universe; nor that the whole was governed by y *animalist*, sentient, and understanding nature, presiding over it as the ad of it." The term being technical, and, with its cognates, more or less rrent in the seventeenth century, it seemed best to retain it, defining and ustrating as above. Its meaning is, I think, sufficiently evident. It is to noticed, however, that Erdmann, in his *Errores Typographici*, prefixed his edition, reads *aimant* instead of *animant*. Jacques's text also has *nant*. The translation would then be: The *loadstone* or *magnet;* and haarschmidt, following this reading, renders it "der Magnet," in his German inslation of the *Nouveaux Essais*, in J. H. v. Kirchmann's *Philos. Bibliothek*, rlin, 1873. As I translate on the basis of Gerhardt's text I retain his read-; and its translation, with the note explaining the term, although at the ssent writing the reading of Erdmann and Jacques seems more congruous th the context, and so more likely to be the true one. — Tr.

Ph. It seems that, in general, hard and soft are names whic we give to things solely as related to the particular constitu tion of our bodies.

Th. [But then many philosophers would not ascribe har ness to their atoms. The notion of *hardness* does not depen upon the senses, and its possibility can be conceived by th reason, although we are further convinced by the senses th it is actually found in nature. I should, however, prefer th word *compactness* — *fermeté* (if I were allowed to use the wor in this sense) — to that of *hardness,* for there is some compac ness even in soft bodies. I seek even a more suitable an general term, like *consistence* or *cohesion.* Thus I woul oppose hard to soft, solid to fluid, for wax is soft, but, unle melted by heat, it is not fluid and preserves its bounds; an in fluids even there is ordinarily cohesion, as is shown in dro of water and of mercury. I am also of opinion that all bodi have some degree of *cohesion,* as I also believe that there a none which do not have some *fluidity,* and whose cohesion not capable of being overcome; so that, in my opinion, th atoms of Epicurus,[1] whose hardness is supposed to be invin ble, cannot occur any more than the subtile, perfectly flu matter of the Cartesians. But this is not the place to justi this opinion or to explain the rationale of cohesion.

Ph. The perfect solidity of bodies seems to be justified experiment. For example, water incapable of yielding, pass through the pores of a hollow globe of gold, in which it w confined, when this globe was put under pressure in Floren

Th. [There is something to be said as to the inference whi you draw from this experiment, and from what happened the case of the water. The air as well as the water is a bod which is compressible at least *ad sensum,* and those who woul maintain a complete rarefaction and condensation will say th water is already too compressed to yield to our machines, air very much compressed would resist also a further compr sion. I admit, however, on the other hand, that if any slig change should be noticed in the volume of the water, it mig be ascribed to the air which is enclosed in it. Without ent-g now into the discussion whether pure water is not itself npressible, as it is found that it is dilatable when it evapo- es, I am, nevertheless, decidedly of the opinion of those who lieve that bodies are perfectly impenetrable, and that there save in appearance, neither condensation nor rarefaction. t this kind of experiment is as little capable of proving this the tube of Torricelli[1] or the machine of Guerike[2] are suffi- nt to prove a perfect vacuum.[3]

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[1] Epicurus, December, 342, or January, 341–270 B.C. — TR.

§ 5. *Ph.* If the body were strictly capable of rarefaction l compression, it might change in volume or extension, but t not being so, it will be always equal to the same space; l, moreover, its extension will be always distinct from that space.

Th. [The body might have its own extension, but it does not reby follow that it would be always determinate or equal the same space. Nevertheless, although it may be true that the conception of body something besides space is conceived it does not thereby follow that there are two extensions — t of space and that of body; for it is as when in conceiving eral things at once, one conceives something besides the nber, viz.: *res numeratœ;* and, moreover, there are not two ltitudes, the one abstract — *i.e.*, that of number; the other crete — *i.e.*, that of the things enumerated. Likewise one say that it is not necessary to think of two extensions — one abstract, of space, the other concrete, of body, the con-

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Evangelista Torricelli, 1608–1647, a celebrated Italian physicist and mathe- ician, the inventor of the mercurial barometer, long called the "Torricel- tube." He had a controversy with Roberval (*vid. ante*, p. 107 and note) as e discovery of the quadrature of the cycloid. Torricelli found the area of urve, and furnished the demonstration of it, which he published in a tract, *notu gravium naturaliter accelerato* in his *Opera geometrica*, Florence, . — Tr.

Otto von Guerike, 1602–1686, a German physicist, who devoted himself cially to experimenting upon the vacuum, and who, after many attempts, ly, in 1654, hit upon an air machine, which enabled him to undertake ries of experiments upon the different effects of vacuum. His labors and ipal observations have been published under the title, *Experimenta nova, cant, Magdeburgica, de vacuo spatio*, etc., Amsterdam, 1672. — Tr.

Descartes maintained the impossibility of a vacuum. *Cf. Prin. Philos.*, II., ; English translation by John Veitch, LL.D., *The Method, Meditations, Selections from the Principles of Descartes*, etc., 8th ed., p. 241, Edin- h: William Blackwood & Sons, 1881; also *vid. ante*, p. 16, and the fifth r to Samuel Clarke, § 34, Gerhardt, Vol. 7, p. 396; Erdmann, p. 766, b; slation, Duncan, *Philos. Works of Leibnitz*, p. 262. — Tr.

crete existing as such only through the abstract. And bodies pass from one part of space to another — *i.e.*, chan order among themselves — things also pass from one part the order or of a number to the other, when, for example, t first becomes the second and the second the third, etc. fact, time and space are only kinds of order,[1] and in the orders the vacant place (which in relation to space is call vacuum), if there were any, would show the possibility only that which is lacking together with its relation to the actual.

Ph. I am nevertheless very glad that you agree with that matter does not change in volume. But you seem to too far, sir, in not recognizing two extensions, and you semble the Cartesians, who do not distinguish space from ma ter.[2] Now it seems to me that if a class is found who, n having these distinct ideas (of space and of solidity which fi it), blends them and makes of the two one only, we cannot s how these persons can converse with others. They are lik blind man who, when another man speaks to him of scarl thinks it resembles the sound of a trumpet.

Th. [But I hold at the same time that the ideas of ext sion and solidity, like that of scarlet-color, do not consist in *I know not what.*[3] I distinguish extension and matter, contra the view of the Cartesians. Still I do not believe that there e two extensions; and since those who dispute over the difference between extension and solidity are agreed on several uths upon this subject and have some distinct notions, they n find therein the means of extricating themselves from their sagreement; thus the assumed difference upon ideas ought t to serve as a pretext for eternal disputes, although I know at certain Cartesians, otherwise very able, are accustomed intrench themselves in the ideas which they pretend to ve. But if they would avail themselves of the means which have before given for recognizing ideas true and false, and which we shall speak also in the sequel, they would retire om a position which is not tenable.

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[1] *Cf.* Letter to Des Bosses, June 16, 1712, Gerhardt, Vol. 2, p. 450; Erdma p. 682, b: "Spatium fit ordo coexistentium phænomenorum, ut tempus suc sivorum," *i.e.* "Space is the order of co-existing, as time of successive p nomena"; also the letters to Clarke, Gerhardt, Vol. 7, pp. 345 *sq.*; Erdma pp. 746 *sq.*, translation, Duncan, *Philos. Works of Leibnitz*, pp. 238 *sq.*; K *Kritik d. r. Vernunft*, Erst. Th., Absch. 1 und 2, §§ 2–7, and translation Max Müller, and Watson in *The Philosophy of Kant, as contained in extr from his own writings.* New York: Macmillan & Co., 1888. — TR.

[2] *Cf.* Descartes, *Prin. Philos.* II., §§ 8–15; Veitch's translation, pp. 236– — TR.

[3] Leibnitz's expression is "un *je ne say quoi.*" Schaarschmidt tr lates it "ein *undenkbares Etwas.*" It seems to be equivalent to an in inite somewhat which is the ultimate essence of things, and which is cause of, and by differentiation becomes, the particular. Leibnitz, t means to say that the ideas of extension and solidity are distinct. *Cf.* Dewey, Ph.D., *Leibniz's New Essays concerning the Human Understan a Critical Exposition*, p. 134. As applied to personal beings, it seems t equivalent to the "unconscious presentations" — *i.e.* "the dark side of soul-life," "the proper basis of Individuality." "Genius, disposition, fee are the terms by which a later time has designated what Leibnitz call *je ne sais quoi*, whereby every one is preformed by nature to something ticular" ("Ganz wie bei dem blossen Monaden ihre individuelle Bescha heit in dem Momente der Schranke, der *materia prima*, lag, ganz so we

CHAPTER V

OF SIMPLE IDEAS WHICH COME BY DIFFERENT SENSES

Ph. The ideas, the perception of which comes to us from re than one sense, are those of space, or extension, or fig-, of motion and rest.

Th. [The ideas which are said to come from more than one se, like those of space, figure, motion, rest, are rather from nmon-sense, that is to say, from the mind itself, for they ideas of the pure understanding, but related to externality, l which the senses make us perceive; they are also capable definition and demonstration.]

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diese unbewussten Vorstellungen, d. h. wird die dunkle Seite des Seelenens, als der eigentliche Grund der Individualität bestimmt. Genius, nüth, Gefühl sind die Worte, mit denen eine spätere Zeit das bezeichnet was *Leibnitz* das *je ne sais quoi* nennt, wodurch Jeder von Natur zu as Besonderem präformirt ist." Erdmann, *Grundriss d. Gesch. d. Philos.*, Auflage 2te Bd. § 288, 5, s. 161. Berlin, 1878; English translation, Vol. 2, 91, London: Swan Sonnenschein & Co., 1889). *Cf.* also Leibnitz, *New ays*, Preface, *vid. ante*, pp. 47 *sq.*, Book II., chap. 1, § 15, Th., *sq.*, and mann's exposition of the same, *op. cit.*, s. 160, 161. Also Professor Dewey's t excellent work cited above. — TR.

CHAPTER VI

OF SIMPLE IDEAS WHICH COME BY REFLECTION

Ph. The simple ideas which come by reflection are the ide of the understanding and of the will [for we ourselves pe ceive them in reflecting upon ourselves.]

Th. [It is doubtful if all these ideas are simple, for it clear, for example, that the idea of the will includes that the understanding, and that the idea of motion contains th of figure.

CHAPTER VII

OF IDEAS WHICH COME BY SENSATION AND REFLECTION

§ 1. *Ph.* There are some simple ideas which make themselv perceived in the mind by all the avenues of sensation and reflection also — viz.: pleasure, pain, power, existence, unity

Th. [It seems that the senses cannot convince us of *the ex- ence* of sensible things without the aid of the reason. Thus should think that the idea[1] of existence comes from reflecti That of power also and of unity come from the same sour and are of a wholly different nature from the perceptions pleasure and pain.]

CHAPTER VIII

OTHER CONSIDERATIONS UPON SIMPLE IDEAS

§ 2. *Ph.* What shall we say of ideas of privative qualiti It seems to me that the ideas of rest, darkness, and cold are positive as those of motion, light, and heat. Nevertheless, proposing these privations as the causes of privative ide follow the common view; but in the main it will be diffi determine whether there is really any idea which arises om a privative cause until it has been determined whether st any more than motion is a privation.

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[1] The French is "la consideration de l'existence." — Tr.

Th. [I had not believed that we could have reason to doubt e privative nature of rest. It suffices it that motion in the dy be denied, but it does not suffice for motion to deny rest, d it is necessary to add something more to determine the de-ee of motion, since it receives materially more or less, while l rest is equal. It is another thing when we speak of the use of rest, which must be positive in the secondary[1] matter mass. I should furthermore regard the very idea of rest as ivative — *i.e.*, that it consists only in negation. It is true at the act of denial is positive.]

§ 9. *Ph.* The *qualities* of things being the faculties they have producing in us perception of ideas, it is well to distinguish ese qualities. They are primary and secondary. Extension, lidity, figure, number, mobility are the original qualities separable from body which I call *primary.* § 10. But I call

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[1] Leibnitz constantly distinguishes between primary and secondary matter. *imary matter* is the primitive passive power belonging to each separate ng as such, by which it is distinguished from God and in which is grounded possibility of representing itself as different. It is essential to and insepa-le from the entelechy, or principle of activity, which it completes, the two ted producing the perfect substance or monad. By itself it is a pure straction or potentiality, and not a substance. It is equivalent to confused as, thus to an imperfect manifestation or phenomenon of spirit — since all tter is ultimately spirit or has its final reason or source in spirit — but a entiality of spirit capable sometime of realizing perfectly all its intrinsic, now latent, activity. *Secondary matter* is a mass resulting from the union many monads or complete substances, each having its own primary matter l its own entelechy, with their derived forces, activities, receptivities. It not, however, a substance; and its extension resulting from the union of -extended simple substances is only phenomenal, though not on that ount unreal, being due to our confused perception, and consisting in the enetrability, resistance, or inertia of the monad on its passive side; an ension which will disappear when the activity of the monad becomes pure perfect. *Cf.* Letters to Tolomei, Dec. 17, 1705, Gerhardt, Vol. 7, pp. 467– ; Des Bosses, March 11, Oct. 16, 1706, March 16, 1709, Gerhardt, Vol. 2, 304, 324, 368; Erdmann, pp. 435, 440, 456; *De anima brutorum*, 1710, G. 7, ; E. 463; Letters to Rud. Christ. Wagner, June 4, 1710, G. 7, 528, E. 465; slation, Duncan, *Philos. Works of Leibnitz*, p. 190 *sq.*; Bierling, Aug. 12, l, G. 7, 500–502, E. 677–678; Remond, Nov. 4, 1715, G. 3, 656–660; E. 735– ; Feb. 11, 1715, § 4 (reply to Remond's fourth difficulty stated in his letter to bnitz, Jan. 9, 1715), G. 3, 636, E. 725; also the writing dated July, 1714, and t published by Gerhardt, 3, 622–624. *Cf.* also Erdmann, *Grund. d. Gesch. d. los.*, 3d ed., § 288, 2, 3; Dewey, *Leibnitz, New Essays*, chaps. 7 and 8. — Tr.

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secondary qualities the faculties or powers of bodies to produ certain sensations in us, or certain effects in other bodies, the fire, for example, produces a certain effect in the wax whe melting it.

Th. [I think we can say that when the power is intelligibl and can be distinctly explained, it should be reckoned amo *the primary qualities;* but when it is only sensible and giv only a confused idea, it should be put among *the secondary qu ities.*]

§ 11. *Ph.* These primary qualities show how bodies act up one another. Now, bodies act only by impulse, at least so f as we can conceive the process, for it is impossible to und stand how bodies can act upon what they do not touch, whi is equivalent to imagining that they can act where they a not.

Th. [I am also of the opinion that bodies act only by impul Yet, there is some difficulty in the proof of what I have ju heard; for attraction sometimes occurs without contact, and can touch and draw without any visible impulse, as I ha shown above[1] in speaking of hardness. In the case of the ato of Epicurus, the one part pushed would draw the other wi it, and would touch it in putting it in motion without impul And in the case of attraction between contiguous things cannot say that the one which draws with itself acts where is not. This reason would militate only against attractio from a distance, as would be the case in reference to what a called *vires centripetæ* advanced by some scholars.]

§ 13. *Ph.* Now, certain particles, striking our organs in a c tain way, cause in us certain sensations of colors or tastes other secondary qualities which have the power of produc these sensations. And it is no more difficult to conceive t God can attach such ideas (as that of heat) to motions, wh which they have no resemblance, than it is difficult to conce that he has attached the idea of pain to the motion of a pie of iron which divides our flesh; which motion the pain in manner resembles.

Th. [It is not necessary to suppose that ideas like those color or of pain are arbitrary and without relation or natu connection with their causes; it is not the custom of Go act with so little order and reason. I should rather say that there is a kind of resemblance, not complete and, so to speak, *in terminis*, but expressive, or a kind of orderly relation, as an ellipse, and even a parabola or hyperbola resemble in some sense the circle of which they are a projection upon a plane, since there is a certain exact and natural relation between what is *projected* and the projection which is made, each point of the one corresponding by a certain relation to each point of the other. This the Cartesians do not sufficiently consider, and for once you have deferred to them more than has been customary with you, and without reason for so doing.]

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[1] *Cf.* Bk. II., Chap. 4, § 4, Th., *ante,* p. 125, *sq.*—TR.

§ 15. *Ph.* I tell you what appears to me, and the appearances are that the ideas of the primary qualities of bodies resemble these qualities, but the ideas produced in us by the secondary qualities resemble them in no way.

Th. [I have just shown how there is resemblance or exact relation in respect to the secondary as well as the primary qualities. It is certainly reasonable that the effect correspond o its cause; and how assert the contrary, since you know distinctly neither the sensation of blue (for example) nor the motions which produce it? It is true that pain does not resemble the motion of a pin, but it may very well resemble he motions which this pin causes in our body, and represent these motions in the soul, as I have no doubt it does. It is also for this reason that we say that the pain is in our body and not that it is in the pin; but we say that the light is in the ire, because there are in the fire motions which are not disinctly sensible apart from it, but whose confusion or conunction becomes sensible, and is represented to us by the idea f light.

§ 21. *Ph.* But if the relation between the object and the ensation be natural, how can it be, as we notice in fact, that he same water may appear warm to one hand and cold to the ther? which shows that the heat is no more in the water than the pain is in the pin.

Th. [This proves all the more that heat is not a sensible uality or power of making itself felt absolutely all at once, ut that it is relative to the suitable organs; for a particular motion in the hand may be mixed with it and change its appearnce. Light, furthermore, does not make itself evident to

badly constituted eyes, and when they are themselves fille
with a great light, they are insensible to a less. Even th
primary qualities (according to our classification) — for e
ample, unity and number — may not appear as they should
for, as Descartes has already stated, a globe touched by th
fingers in a certain way appears double, and mirrors or glasse
cut in facets multiply the object. It does not then follow tha
what does not always appear the same is not a quality of th
object, and that its image does not resemble it. And as f
the heat, when our hand is very warm, the medium heat of th
water does not make itself felt, and modifies rather that
the hand, and consequently the water appears to us cold;
the salt water of the Baltic Sea mixed with the water of th
Sea of Portugal[1] would lessen its specific saline qualit
although the former be itself salt. Thus, in any case, we ca
say that the heat belongs to the water of a bath, although
may appear cold to any one, as honey is called absolute
sweet, and silver white, although the one appears bitter, th
other yellow to some diseased persons, for the classification
made upon the basis of the most common (conditions); an
yet it remains true that, when the organ and the medium a
constituted as they should be, the internal motions and th
ideas which represent them to the soul resemble the motio
of the object which cause color, heat, pain, etc., or, what
here the same thing, express it by means of a relation suf
ciently exact, although this relation does not distinctly appe
to us, because we cannot disentangle this multitude of sma
impressions either in our soul or our body or in what is wit-
out.

§ 24. *Ph.* We consider the qualities which the sun has
blanching or melting wax or hardening mud only as simp
powers, without thinking of anything in the sun correspon-
ing to this blanching, softness, or hardness; but heat and lig
are commonly regarded as real qualities of the sun. Proper
considered, however, these qualities of light and heat which
me are perceptions are not in the sun in any other mann
than the changes produced in the wax when it is blanched
melted.

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[1] Obsolete name for that part of the Atlantic which washes the coast
Portugal. — Tr.

Th. [Some have pushed this doctrine so far that they have esired to persuade us that if any one could touch the sun he ould find there no heat. The counterfeit sun which makes self felt in the focus of a mirror or a burning-glass may disa-use people of this notion. But as to the comparison between he power of heating and that of melting, I dare affirm that if he melted or blanched wax had feeling, it would feel some-hing similar to what we feel when the sun warms us, and ould say, if it could, that the sun is warm, not because its hiteness resembles the sun — for when faces are tanned in he sun their brown color should likewise resemble it — but ecause there are in the wax motions which are related to hose in the sun which cause them; its whiteness may come rom another cause, but not the motions which it has had in eceiving it (whiteness) from the sun.]

CHAPTER IX

OF PERCEPTION

§ 1. *Ph.* Come we now to the ideas of reflection in particu-ar. *Perception* is the first faculty of the soul which is occu-ied with our ideas. It is also the first and simplest idea hich we receive by reflection. *Thought* signifies often the ind's working upon its own ideas, when it acts and considers thing with a certain degree of voluntary attention: but in hat we call *perception* the mind is ordinarily purely passive, ot being able to avoid perceiving what it actually perceives.

Th. [We might perhaps add that the animals have percep-on, and that it is not necessary that they have thought, that to say, that they have reflection or what may be its object. Ve ourselves also have minute *perceptions* of which we are not onscious in our present state. It is true that we might very ell perceive them ourselves, and reflect upon them, if we ere not turned aside by their multitude, which distracts our ind, or if they were not effaced, or rather obscured, by reater ones.

§ 4. *Ph.* I admit that when the mind is strongly occupied in contemplating certain objects it does not perceive in an way the impression which certain bodies make upon the orga of hearing, although the impression may be quite strong; bu no perception arises therefrom if the soul takes no cognizanc thereof.

Th. [I should prefer to distinguish between *perception* an *consciousness* (*s'appercevoir*).[1] The perception of light an color, for example, of which we are conscious, is composed o many minute perceptions, of which we are not conscious; an a noise which we perceive, but of which we take no notice becomes *apperceptible* by a little addition or increase; for i what precedes make no impression upon the soul, this littl addition would also make none, and the whole would mak no more. I have already touched upon this point (Ch. II,[2] o this book, §§ 11, 12, 15, etc.)].

§ 8. *Ph.* It is proper to remark here that the ideas whic arise from sensation are often altered by the mental judgmen of grown persons without their perceiving the fact. A fla circle with various light and shade represents the idea of globe of uniform color. But, as we are accustomed to distinguish the images of bodies and the changes of the reflection of light according to the figures of their surfaces, we put in th place of what appears to us the cause the image itself, an confuse the judgment with the appearance.

Th. Nothing is truer, and this it is which gives to paintin the means of deceiving us by the artifice of a very extende perspective. When bodies have flat surfaces, they can be represented without employing shadows by giving only their contours and by simply making pictures after the fashion of th Chinese, but better proportioned than theirs. The sam

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[1] *Cf.* Leibnitz, *Principes de la nature et de la grace fondés en raison*, § "It is well to make a distinction between the *perception*, which is the intern condition of the monad representing external things, and *apperception*, whic is *consciousness* or the reflective knowledge of this internal state; the latt not being given to all souls, nor at all times to the same soul." For th entire piece, which is a brief statement of his philosophical system prepar by Leibnitz himself, with the greatest care, about 1714, *cf.* Gerhardt, Vol. pp. 598–606; Erdmann, pp. 714–718; translation, Duncan, *Philos. Works* *Leibnitz*, pp. 209–217, and note 66, p. 387 *op. cit.* Also Hamilton's Reid, 8 ed., Vol. 2, p. 877, note, and Krauth-Fleming, *Vocab. Philos.*, ed. of 187 articles "Apperception," p. 38, "Consciousness," pp. 109–113, 613, "Perce tion," pp. 373–374, 807–809, "Perceptions (Obscure)," pp. 374–376. — Tr.

[2] This should be chap. 1, I think. — Tr.

ustom is observed in designing medals, in order that the
raughtsman may be less likely to depart from the precise
orm of the antique. But we cannot distinguish exactly by
eans of the design the interior of a circle from the interior of
spherical surface bounded by this circle without the aid of
adows, the interior of each having neither points distin-
uished nor distinguishing features, although there is, however,
great difference which ought to be indicated. Desargues[1]
as accordingly given precepts upon the force of tints and
ades. When, then, a painting deceives us there is a double
ror in our judgments; for first we put the cause for the effect,
d think we see immediately the cause of the image, in which
e resemble a little a dog who barks at a mirror; for, properly
eaking, we see only the image, and we are affected only by
e rays of light. And since the rays of light require time (how-
er little it be), it is possible for the object to be destroyed in
is interval, and for it no longer to exist when the ray reaches
e eye, and that which no longer exists cannot be the object
esent to the sight. In the second place, we further deceive
rselves when we put one cause for another, and think that
hat comes only from a flat picture is derived from a body, so
at in this case there is in our judgments all at once a *me-*
nymy and a *metaphor;* for even the figures of rhetoric pass
to *sophisms* when they impose on us. This confusion of the
fect with the cause, whether true or false, often enters into
r judgments, moreover, upon other things. Thus we feel
r bodies, or what touches them, and we move our arms by
eans of an immediate physical influence, which we think

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[1] Gaspard Desargues, 1593–1662, a French geometer and engineer, a friend
Descartes, Gassendi, Pascal, and Roberval, who wrote on the application of
ometry to the arts as well as on geometry itself. These writings have been
t and their titles are known only through the engraver Bosse. Of his
thode universelle de mettre en perspective des objects donnés réellement,
en devis, avec leurs proportions, mesures, éloignments, sans employer
un point qui soit hors du champ de l'ouvrage, 1630 or 1636, Descartes thus
aks in a letter to Mersenne ("written toward the end of April, 1637,"
ording to Cousin, *Œuvres de Descartes,* Vol. 6, pp. 250–256, Paris: 1824–
6), "Je n'ai reçu que depuis peu de jours le petit livre in folio, qui traite
la perspective: il n'est pas à désapprouver, outre que la curiosité et la
teté du langage de son auteur sont à estimer," I received only a few
s ago the little book in folio treating of perspective: it is not to be con-
ned; further the exactness and perspicuity of the author's language are to
dmired. — Tr.

constitutes the connection of the soul with the body, while in truth we feel and change in that way only what is in us.

Ph. I will at this time propose to you a *problem* which the learned Mr. Molyneux,[1] who employs so profitably his excellent genius in the promotion of the sciences, communicated to the illustrious Mr. Locke. Here it is nearly in his own terms: Suppose a man blind from birth; now grown up, who has learned to distinguish by touch a cube from a globe of th same metal, and almost of the same size, so that when h touches the one or the other he can tell which is the cube an which the globe. Suppose that the cube and the globe bein placed upon the table, this blind man comes to enjoy his sigh The question is, if in seeing them without touching them h could distinguish them, and tell which is the cube and whic the globe. I pray you, sir, tell me what is your opinion upo the matter.

Th. I ought to give some time to thought upon this que tion, which appears to me quite curious: but since you pres me for an immediate reply, I would venture to say betwee ourselves that I think that supposing the blind man know that these two figures which he sees are those of the cube an the globe, he could distinguish them and say, without touc ing, This is the globe, this the cube.

Ph. I fear lest it may be necessary to put you in the crow of those who have failed to answer Mr. Molyneux; for he sen word in the letter which contained this question, that, havin proposed it upon the occasion of Mr. Locke's Essay on Unde standing to different persons of very penetrating minds, h had found scarcely one among them who at once gave such reply upon that point as he thinks should be made, althoug they were convinced of their error after having heard h reasons. The reply of this penetrating and judicious auth is negative; for (he adds) while this blind man has learn by experience of some kind the globe and the cube as th affect his touch, he does not, however, yet know that wh affects the touch in such or such manner must strike the ey

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[1] William Molyneux, 1656–1698, an eminent mathematician. He founded i Dublin, in January, 1684, a Philosophical Society on the model of the Ro Society at London. His principal work, *Dioptrica Nova*, in two parts, w published at London in 1692–1709, in 4to. — Tr.

such or such manner, nor that the projecting angle of the
ibe, which presses his hand in an unequal manner, must
ppear to his eyes as it appears in the cube. The author of
e Essay declares himself at once of the same opinion.

Th. Perhaps Mr. Molyneux and the author of the Essay are
t so far from my opinion as at first appears, and the reasons
r their view, contained apparently in the letter of the for-
er, who has employed them with success in order to convince
en of their error, have been purposely suppressed by the
ter in order to give more exercise to the minds of his
aders. If you will weigh my reply, you will find, sir, that
have placed therein a condition which can be considered as
mprised in the question — viz.: that the question is that of
stinguishing alone, and that the blind man knows that the
o figured bodies, which he should distinguish, are there, and
at thus each of the appearances which he sees is that of the
be or that of the globe. In this case it appears to me
yond doubt that the blind man who ceases to be such can
tinguish them by the principles of reason, united with that
se-knowledge with which touch has before furnished him.
r I do not speak of that which he will do perhaps in fact
l immediately, dazzled and confused by the novelty, or from
ne other cause little accustomed to draw inferences. The
is of my view is that in the globe there are no points dis-
guished by the side of the globe itself, all there being level
without angles, while in the cube there are eight points
inguished from all the others. If there were not this
ns of discerning the figures, a blind man could not learn
rudiments of geometry by touch. But we see that those
n blind are capable of learning geometry, and have indeed
ays certain rudiments of a natural geometry, and that
t often geometry is learned by sight alone, without the
of touch, as indeed a paralytic or other person to whom
h has been almost denied might and even must do.
these two geometries — that of the blind man and that of
paralytic — must meet and agree, and indeed return to the
ideas, although there are no common images. This again
rs how necessary it is to distinguish *images from exact*
s, which consist in definitions. It would really be very
esting and instructive to make a complete examination of

the ideas of a man born blind, to understand the description
he makes of figures. For he may come to this, and he ma
even understand the doctrine of optics, so far as it is depend
ent upon distinct and mathematical ideas, although he coul
not attain to a conception of *clair-confus*, that is to say, th
image of light and of colors. This is why a certain one bor
blind, after having attended lessons in optics, which h
appeared fully to understand, replied to some one who aske
him what he thought light was, that he thought it must
something pleasant like sugar. It would likewise be ver
important to examine the ideas which a man born deaf ar
dumb may have of things not figured, whose description
usually have in words, and which he must have in a mann
wholly different from, though it may be equivalent to ours,
Chinese writing is in fact equivalent to our alphabet, althou
it is infinitely different, and might appear to have been i
vented by a deaf man. I learn, through the favor of a gre
prince, of one born deaf and dumb in Paris, whose ears ha
at last attained to the performance of their function, that
has now learned the French language (for it is from the cou
of France that he was summoned not long since), and that
could say very curious things about the conceptions he had
his former condition and about the change of his ideas wh
he commenced to exercise the sense of hearing. These p
sons born deaf and dumb can go farther than we thi
There was one in Oldenburg in the time of the last Cou
who became a good painter, and showed himself very ratio
in other respects. A very learned man, a Breton by nati
told me that at Blainville, about ten leagues from Nant
belonging to the Duke of Rohan, there was, about 1690
poor man, who lived in a hut near the castle outside of
town, who was born deaf and dumb, and who carried lett
and other things to the town and found the houses, follow
some signs which the persons accustomed to employ h
made him. Finally the poor man became blind also, but
not give up rendering some service and carrying letters i
the town to whatever place they indicated to him by tou
He had a board in his hut which, extending from the doo
the place where his feet were, informed him by its mo
when any one entered his house. Men are very negligen

ɔt obtaining an exact knowledge of the modes of thought ' such persons. If he no longer lives, there is probably ›me one in the vicinity who could still give some information spectìng him, and make us understand how they showed him e things he was to do. But to return to what the man born ind, who begins to see, would think of the globe and the ıbe, seeing them without touching them, I reply that he will stinguish them, as I have just said, if any one informs him at the one or the other of the appearances or perceptions ıich he has of them belongs to the cube or to the globe; ıt, without this previous instruction, I admit that he will t at first venture to think that the kinds of pictures which ey make of themselves in the depths of his eyes, and which ight come from a flat picture upon the table, represent the dies, until touch convinces him of the fact, or until, by rce of reasoning upon the rays of light according to optics, understands by the lights and shades that there is a something which arrests these rays of light, and that it must be actly what remains for him in touch, which result he will ally reach when he sees this globe and this cube revolve, d change the shadows and the appearances in accordance th the motion, or even when, these two bodies remaining at st, the light which illumines them changes its place, or his es change their position. For these are about the means have of distinguishing from afar a picture or a perspece, which represents a body, from the body itself.

§ 11. *Ph.* [Let us return to perception in general.] It disguishes animals from inferior beings.

Th. [I am inclined to the belief that there is some percepn and appetition also in the plants, because of the great ılogy which exists between plants and animals; and if, as commonly supposed, there is a vegetable soul, it of necessity s perception. Yet I do not cease to attribute to mechanism that takes places in the bodies of plants and animals, ept their first formation. Thus I agree that the movent of the plant called sensitive arises from mechanism, and lo not approve of having recourse to the soul when the estion is that of explaining the detail of the phenomena plants and animals.]

14. *Ph.* It is true that for myself, indeed, I cannot help

believing that even in those kinds of animals which are lik the oysters and mussels there is some feeble perception; fo quick sensations would serve only to discommode an anim which is constrained to live always in the place where chan has put it, where it is watered with water, cold or warm, pu or salt, according as it comes to it.

Th. [Very well, I also believe that we can say almost much of plants; but in man's case, his perceptions are accor panied with the power of reflection, which passes to the a when there is any occasion. But when he is reduced to a sta in which he is as it were in a lethargy and almost witho feeling, reflection and consciousness cease, and universal trut are not thought of. But the innate and acquired faculties a dispositions, and even the impressions which are received this state of confusion, do not cease on that account, and a not effaced, though they are forgotten. They will even ha their turn one day in contributing to some notable result, f nothing is useless in nature; all confusion must devel itself; the animals even, having attained to a condition stupidity, ought some day to return to perceptions more e vated; and, since simple substances always endure, we mu not judge of eternity by a few years.]

CHAPTER X

OF RETENTION

§§ 1, 2. *Ph.* The other faculty of the mind, by which advances farther toward the knowledge of things than by si ple *perception*, is that which I call *retention*, which conser the knowledge received by the senses or by reflection. Ret tion works in two ways: in actually conserving the pres idea, which I call *contemplation;* and in preserving the pov to bring them again before the mind, and this is what is cal *memory.*

Th. [One retains also and contemplates innate knowled and very often one cannot distinguish the innate from acquired. There is also a perception of images — either th hich have already existed for some time, or those which are rmed anew in us.]

§ 2. *Ph.* But you believe with us that these images or ideas ase to be anything as soon as they are not actually matters consciousness; and that to say that there are ideas reserved the memory means at bottom only that the soul has in some stances the *power* of reviving the perceptions it has already d with a feeling which at the same time convinces it that it s previously had these kinds of perceptions.

Th. [If ideas were only forms or modes of thoughts, they ould cease with them; but you yourself have admitted, sir, at they are internal objects, and in this way can subsist. nd I am astonished that you can always be satisfied with ese naked *powers* or *faculties*, which you would apparently ject in the scholastic philosophers. It would be necessary explain a little more distinctly in what this faculty consists d how it is exercised; and that would make known that ere are dispositions which are the remains of past impressions in the soul as well as in the body, but of which we are nscious only when the memory finds some occasion for them. d if nothing restored past thoughts, as soon as we no longer nk of them, it would be impossible to explain how the mory can preserve them; and to recur for this purpose to s naked faculty is to speak nowise intelligibly.

CHAPTER XI

DISCERNMENT OR THE FACULTY OF DISTINGUISHING IDEAS

1. *Ph.* Upon the faculty of distinguishing ideas depends evidence and certainty of several propositions which pass innate truths.

h. I admit that to think of these innate truths and to avel them discernment is necessary; but they do not on t account cease to be innate.]

2. *Ph.* Now, *vivacity* of mind consists in recalling mptly ideas; but *judgment* in representing them clearly distinguishing them exactly.

Th. [Perhaps each is vivacity of imagination, and judg
ment consists in the examination of propositions according t
reason.]

Ph. [I am not averse to this distinction of mind and judg
ment. And sometimes there is judgment in not employing i
too much. For example: to examine certain witty thought
by the severe rules of truth and good reasoning is in a certai
sense an insult.

Th. [This remark is a good one; witty thoughts must hav
at least some apparent foundation in reason, but it is no
necessary to examine them minutely with too much scrupu
lousness, as it is not necessary to look at a picture from
position too near it. It is in this, it seems to me, tha
Father Bouhours fails more than once in his *Art de pense*
dans les ouvrages d'esprit[1] as when he despises this sally c
Lucan:[2]

> Victrix causa diis placuit, sed victa Catoni.

§ 4. *Ph.* Another operation of the mind in respect to it
ideas is the *comparison* it makes of one idea with another a
regards extension, degrees, time, place, or some other circun
stance; it is upon this that the great number of ideas con
prised under the term *relation* depends.

Th. [According to my view, relation is more general tha
comparison, for *relations* are either of *comparison* or of *concu*
rence. The first concern the *congruity or incongruity* (I tal
these terms in a less extended sense) which comprises resen
blance, equality, inequality, etc. The second comprise son
connection, as that of cause and effect, of whole and parts,
position and order, etc.]

§ 6. *Ph.* The *composition* of simple ideas, for the purpo
of making complex ideas, is also an operation of our min
We may refer to this the faculty of *extending ideas* by uniti
those of the same kind, as in forming a dozen from sever
units.

Th. [The one is doubtless as much composition as t ther; but composition of similar ideas is simpler than that of ifferent ideas.]

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[1] Dominique Bouhours, 1628–1702, one of the ablest masters of the Fren
language in the seventeenth century. The title of his work here given foll
Gerhardt's text. The correct title is: *Manière de bien penser dans s*
ouvrages d'esprit, Paris, 1687. There were several editions. — Tr.

[2] *Phars.* 1, 128. — Tr.

§ 7. *Ph.* A dog will nurse young foxes, will play with iem, and will have for them the same fondness as for her wn puppies, if they can be made to suck her so long as is eedful for the milk to spread through their entire body. loreover it does not appear that animals, who have a large umber of young at once, have any knowledge of their *num- er*.

Th. [The love of animals arises from a pleasure which is icreased by habit. But as for the precise number, men even in know the numbers of things only by some skill, as in using umerical names in order to count, or figural arrangements hich make them know at once without counting if anything wanting.]

§ 10. *Ph.* Animals do not form abstract thoughts.

Th. [I agree. They apparently recognize whiteness, and otice it in the chalk or the snow; but this is not yet abstrac- on, for that demands a consideration of what is common, eparated from what is particular, and consequently there iters into it the knowledge of universal truths, which is not iven to the animals. It is well said also that the animals hich speak do not use words to express general ideas, and iat men deprived of the use of speech and of words do not ease to invent other general signs. I am pleased also to see iat you here and elsewhere so well observe the advantages of uman nature.]

§ 11. *Ph.* If animals have some ideas, and are not pure ma- iines, as some maintain, we cannot deny that they have *reason* a certain degree, and, for myself, it appears as evident that iey reason as that they feel. But it is only upon particular leas that they reason according as their senses represent these leas to them.

Th. [Animals pass from one imagination to another by the onnection which they have felt here before; for example, when is master takes a stick, the dog fears a whipping. And in any instances children with the rest of mankind proceed owise differently in their passages from thought to thought. his might be called *consecution* and *reasoning* in a very broad nse. But I prefer to conform to the received usage in consecrating these terms to man and in limiting them to the knowledge of some *reason* of the connection of perceptions, whic sensations alone cannot give; their effect being only to caus us naturally to expect at another time this same connectio which we have noticed before, although perhaps the reason are no longer the same, a fact which often deceives those wh are governed only by the senses.]

§ 13. *Ph. Idiots* lack vivacity, activity, and movement i the intellectual faculties, whereby they are deprived of the us of reason. *Madmen* seem to be at the opposite extreme, for i does not appear to me that these latter have lost the power t reason, but having wrongly united certain ideas, they tak them for truths, and deceive themselves in the same way a those who reason justly upon false principles. Thus you wil see a madman who thinks he is king maintaining by a jus consequence that he should be served, honored, and obeye according to his rank.

Th. [*Idiots* do not exercise reason, and they differ from som *stupid persons* who have good judgment, but, not having promp conception, they are despised and disturbed as he would b who wished to play ombre with persons of distinction an thought too long and too often of the part he must take. remember a learned man who, having lost his memory by th use of certain drugs, was reduced to this condition, but hi judgment always appeared. A man wholly mad lacks judg ment on nearly every occasion; but the vivacity of his imag nation may make him agreeable. But there are particula madmen who make a false supposition at an important poin in their lives, and reason justly thereupon, as you have we said. There is such a man, well known at a certain cour who believes himself destined to redress the affairs of th Protestants and to bring France to reason, for which purpos God caused the greatest personages to pass through his bod in order to ennoble it; he desires to marry all the princess he sees to be marriageable, but after having made them hol in order to have a holy progeny who are to rule the land he attributes all the misfortunes of war to the little attentio paid to his advice. In speaking with a certain sovereig he takes every necessary measure not to lower his dignit When they enter into conversation with him, he maintai mself so well that I have doubted more than once whether s madness is not feigned, for he is not inconvenienced by . However, those who know him more intimately assure me at his madness is wholly genuine.]

CHAPTER XII

OF COMPLEX IDEAS

Ph. The understanding bears not a little resemblance to room wholly dark, which has only certain small openings to t in from outside exterior and visible images, so that if these ages, coming to be painted in this dark room, could remain ere and be placed in order, so that they could be found upon casion, there would be a great resemblance between this om and the human understanding.

Th. [To make the resemblance greater, you should suppose at in this room there was a canvas to receive the images, not en, but diversified by folds, representing the (kinds of) inte knowledge; further, that this canvas or membrane being retched would have a kind of elasticity or power of action, d also an action and reaction accommodated as much to the st folds as to the newly arrived kinds of impressions. And is action would consist in certain vibrations or oscillations, ch as are seen in a stretched string so touched that it gives rth a kind of musical sound. For not only do we receive ages or outlines in the brain; but we form besides new ones, en we look at *complex ideas.* Thus the canvas that represents our brain is necessarily active and elastic. This comrison would explain tolerably well what passes in the brain; t as for the soul, which is a simple substance or *monad,* it presents without extension these same varieties of extended asses and perceives them.[1]]

§ 3. *Ph.* Now complex ideas are either modes or substances relations.

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[1] According to the principle of Pre-established Harmony. *Cf. Systeme uveau de la nature,* etc., 1695, §§ 14, 15; Gerhardt, 4, 484, 485; Erdmann, , 128; Jacques, 1, 475, 476; translation, Appendix, p. .—Tr.

Th. [This division of the objects of our thought into su stances, modes,[1] and relations is sufficiently to my taste. I b lieve that qualities are only modifications of substances, ar that the understanding adds thereto the relations.[2] From th follows more than you think.]

Ph. Modes are either simple (as a dozen, a score, which a composed of simple ideas of the same kind, *i.e.* of units) mixed (as beauty), into which enter simple ideas of differe kinds.

Th. Perhaps *dozen* or *score* are only relations, and are co stituted only in connection with the understanding. Units a separate, and the understanding gathers them together ho ever dispersed they be. Yet, although relations are from th understanding, they are not groundless or unreal. For in th first place understanding is the origin of things; and inde the reality even of all things, simple substances excepted, ul mately consists only of perceptions of the phenomena of si ple substances. It is often the same with regard to the mix modes; *i.e.* it is necessary to refer them rather to the re tions.]

§ 6. *Ph.* The ideas of *substances* are certain combinations simple ideas, which are supposed to represent particular a distinct things, subsisting by themselves, among which ide the obscure notion of *substance,* which is assumed witho knowing what it is in itself, is always considered as the fi and chief.

Th. [The idea of substance is not so obscure as you thin You can know what it ought to be, and what it knows of its in other things; and indeed the knowledge of the concre always precedes that of the abstract; the hot (thing) rath than the heat.]

§ 7. *Ph.* In regard to substances there are also two kinds ideas: the one of single substances, like that of a man, or sheep; the other of several substances joined together, as an army of men, or a flock of sheep. These collections for also a single idea.

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[1] *Cf.* Descartes, *Prin. Philos.*, I., § 56; Veitch's translation, 8th ed., p. 2; Spinoza, *Ethica*, Pt. I., Def. 3; Elwes' translation, Vol. 2, p. 46; Locke, *Ess*, Bk. II., chap. 12, § 4, Vol. 1, p. 280 (Bohn's ed.). — TR.

[2] *Cf.* Leibnitz, *New Essays*, Bk. II., chap. 30, § 4. — TR.

Th. [This unity of the idea of aggregates is very true; but
timately you must admit that this collective unity is only a
ngruity or relation, whose ground is in that which is found
each of the single substances separately. Thus these *beings*
aggregation have no other completed unity than the mental;
nsequently their entity also is in some mental shape or phe-
menon, as that of the rainbow.]

CHAPTER XIII

OF SIMPLE MODES, AND FIRST OF THOSE OF SPACE

§ 3. *Ph.* Space considered with respect to the length which
parates two bodies is called *distance;* with respect to length,
eadth, and depth it may be called *capacity.*

Th. [To speak more distinctly, the *distance* between two
ed things (be they points or extensions) is the length of the
ortest possible line that can be drawn from one to the other.
is distance may be considered absolutely or in a certain
ure which comprises the two distant things. For example,
straight line is absolutely the distance between two points.
t these two points, being in the same spherical surface, the
tance of these two points in this surface is the length of
shortest great arc of a circle, which may be drawn from
point to the other. It is well also to notice, that distance
not only between bodies, but also between surfaces, lines,
nts. It may be said that the *capacity* or rather the *interval*
ween two bodies or two other extensions, or between an
ension and a point, is the space constituted by all the
rtest lines which may be drawn between the points of each.
is interval is filled, except when the two fixed things are
the same surface, when the shortest lines between the
nts of the fixed things must also fall in this surface or
st there be expressly formed.]

4. *Ph.* Besides that which is in nature, men have estab-
ied in their minds the ideas of certain determinate lengths,
n inch or a foot.

h. [They cannot do it. For it is impossible to have the idea of a precisely determined length. You can neither sa nor understand by the mind what an inch or a foot is. Ar you can preserve the meaning of these terms only by re measures, which you suppose unchanging, by means of whic you can always recover them. Thus Mr. Greaves,[1] an En lish mathematician, desired to make use of the pyramids Egypt, which have endured a long time and will endure appa ently some time longer, to conserve our measures, by showin posterity the propositions[2] which have been sketched in de nite lengths in one of these pyramids. It is true that a litt after it was discovered that pendulums serve to perpetua measures (*mensuris rerum ad posteros transmittendis*), as Hu gens,[3] Mouton,[4] and Buratini, formerly *maistre de monnoye* Poland, have demonstrated[5] by showing the proportion of o measures of length to that of the pendulum, which beats pr cisely a second (for example), *i.e.* the 86400th[6] part of revolution of the fixed stars, or of an astronomical day; an Buratini has composed a treatise expressly thereupon, whi have seen in manuscript. But there is, however, this imperction in this measure of pendulums, which must be limited certain countries, for pendulums to beat in the same time ed to be shorter at the equator. And it is furthermore cessary to assume the constancy of the really fundamental easure, viz.: the length of a day or of a revolution of the obe of the earth around its axis, and also of the cause of avitation, not to speak of other circumstances.]

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[1] John Greaves, 1602–1652, Savilian Professor of Astronomy at Oxfo 1643–1648. His *Pyramidographia, or a Discourse on the Pyramids in Egy* 1646. — Tr.

[2] Gerhardt and Erdmann read: "propositions"; Jacques reads: "prop tions"; Schaarschmidt translates "Verhältnisse." — Tr.

[3] Christian Huygens, 1629–1695, a Dutch physicist, geometer, and astronom He discovered the laws of double refraction, and was the first to establish a sure foundation the wave theory of light, in his *Traité de la lumiè* Leyden, 1690. His researches in physical optics constitute his chief claim scientific immortality. His application of the pendulum to regulate the mo ment of clocks, arising from his felt need of an exact measure of time astronomical observations, dates from 1656. He published his *Descript de l'horloge à pendule* in 1657, and presented his first "pendulum-clock' the States-General June 16, 1657. This *Description* was republished as cha of his *magnum opus*, the *Horologium oscillatorium, sive de motu pendulor ad horologia adaptato*, dedicated to Louis XIV., March 25, 1673. In chap. this work he determined the centre of oscillation of a pendulum, and co quently the length of the simple isochronous pendulum. His works w published in two vols. 4to, *Opera varia*, Leyden, 1724, and two supplement vols. 4to, *Opera reliqua*, Amsterdam, 1728. — Tr.

[4] Gabriel Mouton, 1618–1694, a French mathematician and astronon principally known by his *Observationes diametrorum solis et lunæ appa tium*, Lyons, 1670. His principal title to honorable mention in the hist of science is the invention of the method of differences for the calculatio tables of every kind, afterwards reduced to a system by Sir Isaac New 1642–1727, and known by us as our method of interpolation. — Tr.

[5] Erdmann and Jacques read: "prétendû montrer," *i.e.* claimed to dem strate. — Tr.

[6] Erdmann and Jacques read: "864,000th," evidently an error. — Tr.

§ 5. *Ph.* Observing how extremities are terminated either straight lines which form distinct angles, or by curved lines which no angle can be perceived, we form the idea of *figure.*

Th. [A superficial figure is terminated by a line or by lines: t the figure of a body can be limited without determined es, as for example that of a sphere. A single straight line plane surface cannot enclose any space or make any figure. t a single line can enclose a superficial figure, for example circle, the oval, as also a single curved surface can enclose olid figure, like the sphere and the spheroid. Yet, not only veral straight lines or plane surfaces, but also several curved es or several curved surfaces, can concur together and form en angles between themselves, when the one is not the tannt of the other. It is not easy to give *the definition of figure* general according to the usage of geometers. To say that it a limited extension would be too general, for a straight line, example, although terminated by the two ends, is not a ure and even two straight lines cannot make one. To say t it is an extension limited by an extension is not general ough, for the entire spherical surface is a figure and yet it is limited by any extension. It may be said, however, that *re* is a limited extension, in which there are an infinite num- of paths from one point to another. This definition comses limited surfaces without terminating lines which the ceding definition did not comprise, and excludes the lines, ause from one point to another in a line there is only one h or a determined number of paths. But it will be still er to say that figure is limited extension, which may admit extended section, or better which has *breadth,* a term which herto had not been further defined.]

6. *Ph.* At the least all figures are only simple modes of e.

Th. [According to your view, the simple modes repeat t
same idea, but in figures there is not always the repetition
the same mode. Curves differ much from straight lines a
between themselves. So I do not know how the definition
the simple mode will be in place here.]

§ 7. *Ph.* [We need not take our definitions too strict
But let us pass from figure to *place.*] When we find all t
pieces upon the same squares of the chess-board where we l
them, we say that they are all in *the same place,* although p
haps the chess-board has been moved. We say also that t
chess-board is in the same place, if it remains in the same p
of the cabin of the vessel, although the vessel has sailed. T
vessel is also said to be in the same place supposing
keeps the same distance with reference to the parts of
neighboring countries, although the earth has perhaps turn
round.

Th. [*Place* is either *particular* when considered with reg
to certain bodies, or *universal* when it relates to all, and w
reference to which all the changes possible in relation to a
body are taken into account. And if there were nothing fi
in the universe, the place of each thing could still be det
mined by reasoning,[1] if there were means of making a record
all the changes, or if the memory of a creature could suffice
them, as they say, the Arabs play chess by memory and
horseback. What we cannot understand, however, is nevert
less determined in the truth of things.]

§ 15. *Ph.* If any man asks me what *space* is, I am ready
tell him when he tells me what extension is.

Th. [I wish I could speak of the nature of fever or any ot
malady with the same certainty with which I believe the nat
of space is expounded. Extension is the abstract of the
tended. Now the extended is a continuum whose parts
coexistent, or exist at the same time.]

§ 17. *Ph.* If any one asks whether space without body

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[1] Schaarschmidt says that the statements here made by Leibnitz have s
found their confirmation and accomplishment through Gauss' *Theoria m*
corporum coelestium. The work was published at Hamburg, in 1809,
"gave a powerful impulse to the true methods of astronomical observati
The author, Carl Friedrich Gauss, 1777–1855, was an eminent German ma
matician. His collected works, edited by E. J. Schering, have been publi
by the Royal Society of Göttingen, 7 vols., 4to. Göttingen: 1863–1871.—T

bstance or accident, I should reply without hesitation that I
ow nothing about it.

Th. [I fear you may think me vain in wishing to determine
iat you, sir, admit you do not know. But if it is expedient
judge, (I fear) that you know more about the matter than
u state or think you do. Some have believed that God is
e place of things.[1] Lessius and Guericke, if I am not mis-
ken, were of this opinion, but then place contains something
ore than what we attribute to the space which we deprive of
activity; and in this way it is no more a substance than
ne, and if it has parts it cannot be God. It is a relation, an
ler, not only between existences, but also between possibili-
s as they may exist. But its truth and reality, like all
ernal truths, is grounded in God.]

Ph. [I am not far from your view, and you know the pas-
ge of St. Paul, who says that we live and move and have
r being in God.[2] Thus, according to different ways of con-
lering the matter, it may be said that space is God, and also
it it is only an order or a relation.]

Th. [The better statement then will be that space is an
ler, but that God is its source.]

§ 18. *Ph.* [Yet to know whether space is a substance, it
uld be needful to know in what the nature of substance in
ieral consists. But in this there is a difficulty. If God,
ite spirits, and bodies participate in common in an identical
ostantial nature, would it not follow that they differ only as
ferent modifications of this substance?]

This doctrine appeared very early. Schaarschmidt refers to the collection
oems of uncertain origin called *Orphica*, where (Fragt. vi., p. 457, ed. Her-
n, v. 8 and 9) it is poetically expressed thus: "All that has been and here-
er will be, is formed together in the bosom of Zeus." Again (v. 17–20):
ne is the ruling Being, in whom the All moves, fire, water, earth and air,
and night, reason, the first principle and joyful love — all this lies in the
it bosom of Zeus," etc. Malebranche represents a phase of the same view
iis doctrine that we see all things in God. *Cf.* his *De la Recherche de la
ité*, III., ii., 6: "We abide thus in the view that God is the intelligible
ld or the place of spirits, just as the material world is the place of bodies.
n His power they receive all their modifications, in His wisdom they find
heir ideas, by His love they are moved in all their moral inclinations. But
use His power and His love are nothing else than Himself, we will believe
St. Paul, that He is not far from any one of us, and that in Him we live
move and have our being." *Cf.* also James Martineau, *Types of Ethical
ory*, 2d ed., Vol. 1, p. 170 *sq.* New York: Macmillan & Co., 1886. — Tr.

Acts 17:28. — Tr.

Th. [If this result follows, it would follow also, that Go finite spirits, and bodies, participating in common in an ide tical nature of being, would differ only as different modific tions of this being.]

§ 19. *Ph.* Those who first thought of regarding accidents a kind of real beings, which need something in which to inher were constrained to invent the word substance to serve as support to the accidents.

Th. [Do you then think, sir, that the accidents can subsi apart from the substance ? or do you mean that they are n real beings ? You seem to multiply difficulties without reaso and I have remarked above that substances or concretes a conceived rather than accidents or abstracts.]

Ph. The words substance and accident are in my view little use in philosophy.

Th. [I admit that I am of another opinion, and I belie that the consideration of substance[1] is one of the most importa and fruitful points of philosophy.]

§ 21. *Ph.* [We have now spoken of substance only by t way, while asking if space is a substance. But it is sufficie for us that it is not a body.] No one will dare to make bo infinite like space.

Th. [Descartes and his followers have said, neverthele that matter has no limits, in making the world indefinite, so th it is not possible for us to conceive of its extremities. A they have changed the term infinite into indefinite with so reason; for there never is an infinite whole in the wor though there are always some wholes greater than others to finity, and the universe even cannot pass for a whole as I ıve elsewhere[1] shown.

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[1] *Cf. New Essays*, Bk. II., chap. 23, § 2; *De primæ philosophiæ emen tione et de notione substantiæ*, 1694, Gerhardt, Vol. 4, pp. 468–470; Erdma pp. 121–122; A. Jacques, *Œuvres de Leibniz*, Vol. 1, pp. 452–454 (in Frenc translation, Appendix, pp. ; *Systeme nouveau de la nature et de communication des substances, aussi bien que de l'union qu'il y a entre l'â et le corps*, 1695, §§ 2, 3, Gerhardt, Vol. 4, pp. 477 *sq.*; Erdmann, pp. 124–1 Jacques, Vol. 1, pp. 469 *sq.*; translation, Appendix, pp. ; *De i natura, sive de vi insita actionibusque creaturum*, 1698, Gerhardt, Vol. 4, 504–516; Erdmann, pp. 154–160; Jacques, Vol. 1, pp. 455–468 (in French); tra lation, Appendix, pp. ; *Considérations sur le principe de vie et les natures plastiques*, 1705, Gerhardt, Vol. 6, pp. 539–546; Erdmann, 429–432; translation, Duncan, *Philos. Works of Leibnitz*, pp. 163–169; *Pr cipes de la nature et de la grace fondés en raison*, c. 1714, Gerhardt, Vol pp. 598–606; Erdmann, pp. 714–718; translation, Duncan, *op. cit.*, pp. 209–2 *La Monadologie*, 1714, Gerhardt, Vol. 6, pp. 607–623; Erdmann, pp. 705–7 translation, Duncan, *op. cit.*, pp. 218–232; also F. H. Hedge, in "The Jour. Sp Philos.," Vol. 1, pp. 129–137. — TR.

Ph. Those who take matter and extension as one and the ıme thing maintain that the inner sides of a hollow vacuous ody would touch. But the space which is between two bodies ffices to prevent their mutual contact.

Th. [I am of your opinion, for although I do not admit a ıcuum, I distinguish matter from extension, and I admit that there were a vacuum in a sphere, the opposite poles in the ollow space would not on that account touch. But I believe at this is a case which the divine perfection does not allow.]

§ 23. *Ph.* It seems, however, that motion proves a vacuum. hen the least part of the divided body is as large as a grain mustard-seed, a void space equal to the size of a grain of ustard is requisite in order to make room for the parts of is body to move freely; the same condition will hold good ıen the parts of the matter are one hundred million times ıaller.

Th. [It is true, that if the world were full of hard corpuses, which could neither yield nor divide, as the atoms are picted, motion would be impossible. But in truth, there is no iginal hardness; on the contrary, fluidity is the original ndition, and bodies are divided as needful, since there is thing to prevent it. This takes away all the force in the gument for a vacuum drawn from motion.]

CHAPTER XIV

OF DURATION AND ITS SIMPLE MODES

§ 10. *Ph.* To extension corresponds duration. And a part duration in which we remark no successions of ideas we l *an instant.*

Th. This definition of *an instant* ought (I believe) to mean popular notion, like that which the common people have of a *point.* For strictly the point and the instant are not parts of time or space, neither have they parts. They are extremities only.

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[1] *Cf. ante*, pp. 16, 17; also *New Essays*, Bk. II., chap. 17, § 1. The proof that universe is not, strictly speaking, a whole, is given in the letter to Des ses, March 11, 1706, Gerhardt, Vol. 2, p. 304 *sq.*, Erdmann, pp. 435–436. — Tr.

§ 16. *Ph.* It is not motion, but a constant succession o ideas which gives us the idea of duration.

Th. [A succession of perceptions awakes in us the idea o duration, but it does not make it. Our perceptions never hav a succession sufficiently constant and regular to correspond t that of time, which is a *continuum* uniform and simple, like straight line. Changing perceptions furnish us the occasio for thinking of time, and we measure it by uniform changes But were there nothing uniform in nature, time could not b determined, as space likewise could not be determined if ther were no fixed or immovable body. So that knowing the rule of different motions, we can always refer them to the unifor intelligible motions, and see beforehand by this means wha will happen through the different motions taken togethe And in this sense time is the measure of motion, *i.e.* unifor motion is the measure of non-uniform motion.]

§ 21. *Ph.* No two parts of duration can certainly be know to be equal; [and you must admit that observations can attai only approximate equality.] After exact research the di covery has been made that there is really an inequality in th diurnal revolutions of the sun, and we do not know but tha the annual revolutions are unequal also.

Th. [The pendulum has made us realize and see the i equality of the days from one noon to another: *Solem dice falsum audet.* It is true that men knew this already, and th this inequality has its rules. As for the annual revolutio which makes good the inequalities of solar days, it may chan in the course of time. The revolution of the earth about i axis which is commonly attributed to the *primum mobile,*[1] is o best measure up to the present time, and clocks and watch serve to divide it for us. Furthermore this same daily revol on of the earth may also change in the course of time: and any pyramid could endure long enough, or if we should build ew ones we could perceive it by observing there the length of endulums a known number of whose beats occurs now during iis revolution; we could also know in some way the change comparing this revolution with others, as with those of upiter's satellites, for it is not apparent that, if there is any ange in one or the other, it will always be proportional.

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[1] In Aristotle's philosophy, τὸ πρῶτον κινοῦν, *i.e.* God, who, himself unmove is the necessary first and unceasing source of the eternal movement of the u verse. *Cf. Metaphys.*, Λ, 6–10, 1071 *sq.*; *Phys.*, VIII., 6, 258^b 10; also Zell *Outlines*, § 56, 3, and *Die Philos. d. Griech.*, 3d ed., 1879, Vol. 4, p. 35 Wallace, *Outlines of the Philos. of Aristotle*, 3d ed., § 39; Hegel, *Gesch. Philos.*, 2d ed., Vol. 2, p. 289 *sq.*; Benn, *The Greek Philosophers*, Vol. 1, 348–350. — Tr.

Ph. Our measure of time would be more exact if we could eserve a past day in order to compare it with the days to me, as we preserve the measures of space.

Th. [But instead of that we are reduced to preserving and atching bodies which move in nearly equal times. Also we nnot say that a measure of space, as for example, an ell hich is preserved in wood or metal remains perfectly the me.]

§ 22. *Ph.* Now since all men manifestly measure time by e motion of the heavenly bodies, it is very strange that one not permitted to define *time* as the measure of motion.

Th. [I just stated (§ 16) how that should be understood. It true that Aristotle says[1] that time is the *number* and not the easure of *motion*. And in fact, it may be said that duration known by the number of periodic equal motions of which e begins when another ends, for example, by so many revolu- ns of the earth or the stars.]

§ 24. *Ph.* Nevertheless to anticipate these revolutions and that Abraham was born in the year 2712 of the Julian era, to speak as unintelligibly, as if you counted from the begin- ng of the world, although you suppose that the Julian era nmenced several hundred years before there were any days, hts, or years marked by any revolution of the sun.

Th. [This vacuum which may be conceived in time, indicates, e that of space, that time and space extend to the possible as ll as to the actual. Besides, of all the chronological methods, t of reckoning the years since the beginning of the world is least convenient, although this would be, without touching n other reasons, only because of the great difference exist- between the Septuagint and the Hebrew text.]

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[1] *Phys.*, IV., 11, 219b 1, 219b 8; *cf.* Wallace, *Outlines of the Philos. of Aris-*, 3d ed., § 44. Wallace quotes the Greek of the first passage here referred –Tr.

§ 26. *Ph.* One may *conceive* the beginning of motion, a though he may not *comprehend* that of duration taken in a its extension. One may give limits to the body, but cannot d it with regard to space.

Th. [It is as I just said that time and space indicate th possibilities beyond the supposition of existences. Time an space are of the nature of eternal truths which consider equall the possible and the actual.]

§ 27. *Ph.* In fact the ideas of time and eternity come fro the same source, for we can in our thought add certain lengt of duration to one another as often as we please.

Th. [But in order to draw from them the notion of *eternit* it is necessary to think besides that the same reason alwa exists for going farther. It is this rational consideration whic achieves the notion of the infinite or the indefinite in possib progress. Thus the senses alone cannot suffice to cause t formation of these notions. And ultimately it may be sa that *the idea of the absolute*[1] is anterior in the nature of thin to *that of the limits* which are added, but we notice the form only as we commence with what is limited and strikes o senses.]

CHAPTER XV

OF DURATION AND EXPANSION CONSIDERED TOGETHER

§ 4. *Ph.* One admits more easily an infinite duration time than an infinite expansion of space, because we concei infinite duration in God, and attribute extension only to matt which is finite, and call the space beyond the universe imagina But (§ 2) Solomon seems to have other thoughts when, spea ing of God, he says: *the heaven and the heaven of heavens c not contain Thee;*[2] and for myself I believe that he magnif too highly the capacity of his own understanding who ima ines he can extend his thoughts farther than the place whe God exists.

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[1] *The idea of the absolute* belongs to our reason as such, *cf. New Ess* Bk. II., chap. 17, § 3, Th., § 16, Th., though we first become aware of it thro our consciousness of the particular ideas of the reason as limitations of idea of the absolute. — TR.

[2] 1 Kings 8:27; 2 Chron. 6:18. — TR.

Th. If God were extended, he would have parts. But dura-
n grants these only to his works. However in relation to
ace immensity must be attributed to him, which gives also
rts and order to the immediate works of God. He is the
irce of possibilities as of actualities, of the one by his
sence, of the other by his will. Thus space like time has
reality only from him, and he can fill the void when it
ms to him good. Thus it is that in this respect he is
erywhere.[1]]

§ 11. *Ph.* We do not know what relations spirits have with
ice, nor how they participate therein. But we know that
y participate in duration.

Th. [All finite spirits are always united to some organic
ly, and they represent to themselves other bodies by means
relations to their own. Thus their relation to space is as
dent as that of bodies. For the rest, before leaving this
oject, I would add a comparison between time and space to
se which you have given; viz.: — if there were a vacuum
space (as, for instance, if a sphere were hollow within), you
ld determine its size; but if there were a vacuum in time,
a duration without changes, it would be impossible to
ermine its length. Whence it comes that you may refute
one who would maintain that two bodies, between which
re is a vacuum, touch; for geometry defends the proposition
t two opposite poles of a hollow sphere would not touch:
you cannot refute the one who would maintain that two
lds, the one of which succeeds the other, touch as to dura-
ı, so that the one necessarily begins when the other ends,
hout the possibility of an interval. You could not refute
I say, because this interval is indeterminable. If space
e only a line, and if body were immovable, it would no
ger be possible to determine the length of the vacuum
veen two bodies.

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[1] od, according to Leibnitz, is *actus purus*, a pure spirit, without body and
ut extension. All other beings require bodies. His omnipresence is
mic. *Cf. New Essays*, Bk. II., chap. 1, § 12, Th., *ante*, p. 113; Letter to
osses, Oct. 16, 1706, Gerhardt, Vol. 2, p. 325, Erdmann, p. 440, b. — Tr.

CHAPTER XVI

OF NUMBER

§ 4. *Ph.* In numbers ideas are both more precise and mo
accurately to be distinguished the one from the other than i
extension, where you cannot observe or measure each equalit
and each excess of size as easily as in numbers, because i
space we cannot by thought attain a certain definite smallne
beyond which we cannot go, like the unit in number.

Th. [That should be understood of the *integer.* For othe
wise *number in its extent*, comprising the fraction, the surd, t
transcendent, and all that may be assumed between two int
gers, is proportional to the line, and there is there as little
a *minimum* as in the *continuum.* Thus the definition of nu
ber as a multitude of units is in place only among the intege
The precise distinction of ideas in extension does not consi
in *size:* for to distinguish size clearly one must have recour
to integers, or to other (measures) known by means of in
gers; thus from *continuous quantity* it is necessary to recur
discrete quantity, in order to have a distinct knowledge of *si*
Thus the modifications of extension, when not joined to nu
bers, cannot be distinguished by *figure,* taking this term
generally that it means everything which makes two ext
sions dissimilar the one to the other.]

§ 5. *Ph.* By repeating the idea of a unit and joining it
another unit, we make a *collective* idea, which we call *t*
And whoever can do that and advance always by adding
more to the last collective idea to which he gives a particu
name, can *count* so long as he has a set of names and suffici
memory to retain them.

Th. [By this means alone one cannot advance very f
For memory would be *too heavily loaded* if it must retain
entirely new name for each addition of a new unit. That
why a certain order and a certain *repetition* of these name
necessary by recommencing in accordance with a certain p
gression.]

Ph. The different modes of numbers are capable of no ot fference than that of more or less; [this is why there are mple modes like those of extension.]

Th. [That may be said of time and of the straight line, but ot of figures, and still less of numbers, which are not only fferent in size but further unlike. An even number may be vided into two equal numbers, but not an uneven. Three d six are triangular numbers, four and nine are squares, ght is a cube, etc. And this principle has place in numbers ill more than in figures, for two unequal figures may be perctly similar to each other, but never two numbers. But I n not astonished that you are often deceived thereupon, beuse one does not commonly have a distinct idea of what is *milar* or *dissimilar*. You see then, sir, that your idea or ur application of *simple* or *mixed modes* is greatly in need of rrection.]

§ 6. *Ph.* [You were right in remarking that it is well to ve numbers their own names to be retained.] Thus I believe at it would be convenient in computation to say a *billion* for evity's sake instead of a million of millions, and instead of a illion of millions of millions, or a million of billions, to say *trillion*, and thus in order to nonillions, for there is little ed of going farther in the use of numbers.

Th. These denominations are good enough. Let $x=10$. at posited, a million will be x^6, a billion x^{12}, a trillion x^{18}, ., and a nonillion x^{54}.

CHAPTER XVII

OF INFINITY

§ 1. *Ph.* One of the most important notions is that of finite and the infinite, which are regarded as modes of ntity.

Th. [Properly speaking, it is true that there is an infinite nber of things, *i.e.* that there are always more of them than be assigned. But there is no infinite number, neither line other infinite quantity, if these are understood as veritable oles, as it is easy to prove. The schools have meant or have n obliged to say that, in admitting a syncategorematic infinite,[1] as they call it, and not a categorematic infinite. Th true infinite exists, strictly speaking, only in *the absolute*, whic is anterior to all composition, and is not formed by th additions of parts.[2]]

Ph. When we apply our idea of the infinite to the fir Being, we do it primarily in respect to his duration and ub quity, and, more figuratively, to his power, his wisdom, h goodness, and his other attributes.

Th. [Not more figuratively, but less immediately, becau the other attributes make their importance known throug relation to those into which enters the consideration parts.]

§ 2. *Ph.* I thought it was established that the mind regar the finite and the infinite as modifications of extension[3] a duration.

Th. [I do not find that it has been established that the co sideration of the finite and the infinite takes place wherev there is bulk and magnitude. And the true infinite is not *modification*, it is the absolute; on the contrary, when it modified, it is limited and forms a finite.]

§ 3. *Ph.* We have believed that since the power of t mind to expand without limit its idea of space by new ad tions is always the same, it is thence that the idea of an in nite space is derived.

Th. [It is well to add that this is because the same ratio seen always to hold good. Let us take a straight line a prolong it until it is double the length of the first. Now is clear that the second line, being perfectly similar to t first, may be itself doubled in order to have a third, which still similar to the preceding; and the same ratio holdi good always, it is never possible to stop the process; th the line may be prolonged to infinity, so that the considerati of the infinite arises from that of similarity or from the sa ratio, and its origin is the same with that of universal a necessary truths. This shows us how what gives completi

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[1] An incompletely defined infinite, capable of or needing still further def tion, but infinite only so far as it cannot really be defined, the *indefin infinite* (*infinitum-indefinitum*). — TR.

[2] *Cf. ante*, pp. 16, 17; also *New Essays*, Bk. II., chap. 13, § 21. — TR.

[3] Locke has: "expansion," *Philos. Works*, Vol. 1, p. 331 (Bohn's ed.) TR.

the conception of this idea is found in ourselves, and can-
ot come from the experience of our senses, just as necessary
uths cannot be proved by induction nor by the senses. The
ea of *the absolute* is in us internally, like that of being; these
osolutes are nothing else than the attributes of God, and it
ay be said that they are not less the source of ideas, because
od is himself the principle of beings. The idea of the abso-
te in relation to space, is only that of the immensity of
od, and so of the others. But you deceive yourself in wish-
g to imagine an absolute space which is an infinite whole
omposed of parts; there is none such, it is a notion which
nplies a contradiction, and these infinite wholes, and their
pposed infinitesimals, are used only in the calculations of
eometers, just like the imaginary roots of algebra.]

§ 6. *Ph.* [We conceive furthermore a magnitude without
nderstanding thereby parts outside of parts.] If to the most
erfect idea I have of the whitest whiteness, I add another of
n equal or less brilliant whiteness (for I cannot add the idea
a whiter than I have, which I suppose the whitest that I
tually conceive), it neither increases nor extends my idea in
ny way; therefore the different ideas of whiteness are called
grees.]

Th. [I do not fully understand the force of this reasoning,
r nothing prevents me from receiving the perception of a
hiter whiteness than what is actually conceived. The true
ason why we are inclined to believe that whiteness cannot be
finitely increased is because it is not an original quality;
e senses give us only a confused knowledge of it; and when
e have a distinct knowledge of it, we shall see that it arises
om the structure, and is limited by that of the organ of
sion. But as regards original or distinctly knowable quali-
es, we see that there are sometimes means of going to
finity, not only in the case of *extension* or, if you prefer,
ffusion or what the scholastic philosophy calls *partes extra*
rtes, as in time and place, but also in the case of *intention* or
grees, for example, as regards velocity.]

§ 8. *Ph.* We have no idea of infinite space, and nothing is
iner than the absurdity of an actual idea of an infinite
mber.

Th. [I am of the same opinion. But this is not because we cannot have the idea of the infinite, but because the infinit cannot be a true whole.]

§ 16. *Ph.* For the same reason we have then no positiv idea of an infinite duration or of eternity, any more than o immensity.

Th. [I believe we have a positive idea of both, and thi idea is a true one, provided it is not conceived as an infinit whole, but as an absolute or attribute without limits whic exists in reference to *eternity*, in the necessity of the existenc of God, without depending upon parts and without the notion being formed by an addition of time. We see furthermore i that way, as I have said already, that the origin of the notio of the infinite comes from the same source as that of necessar truths.]

CHAPTER XVIII

OF OTHER SIMPLE MODES

Ph. There are besides many simple modes formed fro simple ideas. Such are (§ 2) modes of motion, as sliding rolling; those of sound (§ 3) which are modified by notes an airs, as colors by degrees, not to speak of tastes and smell (§ 6). These always[1] have neither measures nor distinc names any more than in the case of the complex modes (§ 7) because use regulates them, and we will speak of them mor fully when we come to words.

Th. [The majority of modes are not sufficiently simple an can be reckoned with the complex, for example, to explain wha sliding and rolling is besides motion, you must consider su face-resistance.]

CHAPTER XIX

OF THE MODES OF THINKING

§ 1. *Ph.* [Let us pass from the modes which come from th senses to those given us by reflection.] *Sensation* is, so t speak, the actual entrance of ideas into the understanding b eans of the senses. When the same idea comes again into e mind, without the action upon our senses, of the external ject which at first caused it to spring up, the act of the nd is called *remembrance;* if the mind tries to recall it, and ly after considerable effort finds and brings it to view, it is *ollection (recueillement)*.[1] If the mind looks upon it attenely for a long time it is *contemplation;* when the idea floats out in the mind without any attention on the part of the derstanding, it is called *reverie.* When the mind reflects on ideas, which present themselves, and when it, so to speak, gisters them in its memory, it is *attention;* and when the nd fixes itself upon an idea with much application, considers on all sides, and will not be turned aside notwithstanding ner ideas which come in the way, we call it *study* or intensess of thought. *Sleep* accompanied by no dream is a cessan of all these things; and *dreaming* is having these ideas in mind while the outer senses are closed, so that they do t receive the impressions of external objects with their ual quickness. It is, I say, having ideas without any sugstion from any external objects or known occasion, and art from any choice or determination in any way of the derstanding. As for that which we call *ecstasy,* I leave ers to judge whether it is not dreaming with the eyes open.

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[1] Locke: "ordinarily," *Philos. Works*, Vol. 1, p. 346 (Bohn's ed.).—Tr.

Th. [It is well to clear up these notions and I will try to in the work. I will say then that it is *sensation* when an ernal object is perceived; that *remembrance* consists in the etition without the reappearance of the object; but when know we have had it, it is *memory.* *Recollection (recueillent)* is commonly understood in a sense different from yours, : as a state in which we disengage ourselves from things order to apply ourselves to some meditation. But since re is no word known to me corresponding to your notion, one may apply to it that which you employ. We give *ntion* to objects which we distinguish and prefer to others. ention continuing in the mind, whether the external object inues or not, and even whether it is found there or not, is

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[1] *Cf.* below, where the French "recueillement," here employed as a transn of the English "recollection," is shown to have a different meaning ise from that of the English word. As "recueillement" is, however, used equivalent for the English word, I have translated it in the second para1 accordingly. — Tr.

consideration; which tending to knowledge without referen to action, will be *contemplation.* Attention, whose aim is learn (*i.e.* the attainment of knowledge for the sake of kee ing it), is *study.* To consider in order to form a plan is *meditate;* but reverie appears to be nothing else than followi certain thoughts for the pleasure one takes therein, with other end; this is why reverie may lead to madness; we forg ourselves, we forget the *dic cur hic,* we approach dreams a chimeras, we build castles in Spain. We can distingui *dreams* from sensations only because they are not united wi them, they are like a world apart. *Sleep* is a cessation of se sations, and in this way *ecstasy* is a very deep sleep from whi one finds difficulty in being awakened, a condition which aris from some internal passing cause, which is added in order exclude this profound sleep, arising from some narcotic from some continuous injury to the functions, as in lethar Ecstasy is sometimes accompanied with *visions;* but there vision without ecstasy, and *vision* seems to be nothing bu dream which passes for a sensation just as if it acquainted with the truth of objects. And when visions are divine, there actually truth in them, which may be known for instance wh they contain particular prophecies which the outcome justifie]

§ 4. *Ph.* From the different degrees of intensity[1] or relation of the mind, it follows that thought is the act and not t essence of the soul.

Th. [Doubtless thought is an act and cannot be the essen but it is an essential act, and all substances are of this character. I have shown above that we always have an infin number of little perceptions, without being conscious of the We are never without *perceptions,* but we are necessarily oft without *apperceptions,* viz.: when there are no distinct p ceptions. It is from not having considered this import point that a relaxed philosophy, as little noble as solid, ha prevailed with so many excellent minds, and that we ha hitherto almost ignored that which is most beautiful in e soul. This is also the reason why so much probability has been found in that error, which teaches that souls are nature perishable.]

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[1] Locke has: "intention and remission," *Philos. Works* (Bohn's ed.), 1, p. 349. — Tr.

CHAPTER XX

OF MODES OF PLEASURE AND PAIN

1. *Ph.* As the sensations of the body, like the thoughts the mind, are either indifferent or followed by pleasure or n, the ideas of them cannot be described any more than all er simple ideas, nor can the words which serve to designate m be defined.

Th. [I believe that there are no perceptions which are olly indifferent to us, but it is enough that their effect be notable in order that they may be thus spoken of, for *isure* and *pain* appear to consist in a notable aid or impedint. I admit that this definition is not at all nominal and t one may give none at all.]

2. *Ph.* The *good* is that which is fitted to produce and rease pleasure in us, or to diminish and cut short some n. *Evil* is fitted to produce or increase pain in us, or to ninish some pleasure.

Th. [I am also of this opinion. The good is divided into virtuous, the agreeable, and the useful, but ultimately I ieve that it must be either agreeable itself, or serving someng else which may give us an agreeable feeling, that is to , the good is agreeable or useful, and virtue itself consists pleasure of mind.]

§ 4, 5. *Ph.* From pleasure and pain come the passions. have *love* for that which can produce pleasure, and the ught of sadness or of pain that a present or absent cause produce is *hatred.* But *hatred* or *love* which relates to ngs capable of happiness or misery is often an uneasiness or ight which we feel to be produced in us by the considera- of their existence or of the happiness which they enjoy.

Th. [I also gave nearly this definition of *love* when I lained the principles of justice, in the preface to my odex juris gentium diplomaticus,"[1] viz.: that to *love* is to be inclined to take pleasure in the complete perfection or ha piness of the object loved. And for that reason one neith considers nor asks for any other pleasure proper than th indeed which is found in the good or pleasure of the one wl is loved; but in this sense we do not, properly speaking, lo what is incapable of pleasure or happiness, and we enjoy thin of this nature without loving them for that reason, unless l a prosopopoeia, and as if we imagined that they themselv enjoy their perfection. It is not, then, properly love wh one says that he loves a beautiful picture for the pleasu which he takes in feeling its perfections. But it is allowab to extend the sense of terms, and their usage varies. Philos phers and theologians even distinguish two kinds of love, viz the love which they call the *love of complacency*, which nothing but the desire or feeling which we have for the o who gives us pleasure, without concerning ourselves wheth he receives it; and the *love of benevolence*, which is the feeli that one has for the one who, by his pleasure or happine gives us some. The first makes us have in view our pleasu and the second that of another, but as making or rather cons tuting ours, for if it did not reflect upon us in some way could not concern ourselves with it since it is impossib although they affirm it, to be separated from the good prop And see how it is needful to understand *disinterested* or no mercenary *love*, in order to reach a favorable conception nobility and not to fall meanwhile into the chimerical one.]

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[1] The *Codex juris gentium diplomaticus*, 1693, a collection of public acts treatises, etc. An excerpt from the Preface of this work, entitled *De no- ibus juris et justitiæ*, is given by Erdmann, pp. 118–120; translation, Dun- *Philos. Works of Leibnitz*, note 48, pp. 379–382. — Tr.

§ 6. *Ph.* The *uneasiness* (French *inquietude*) which a m feels in himself at the absence of anything which if prese would give him pleasure is called *desire*. *Uneasiness* is the pri cipal, not to say the only stimulus which excites human indust and action for whatever good is proposed to man; if the absen of this good is followed by no displeasure or pain, and he who deprived of it can be content and at his ease without its po session, he does not think of desiring, and less still of maki any efforts to enjoy it. He feels for this kind of good only bare *velleity*,[1] the term used to signify the lowest kind of desi ich approaches nearest to that state in which the soul finds elf with regard to anything which is wholly indifferent to when the displeasure which the absence of anything causes so inconsiderable that it is carried only to feeble longings thout being compelled to avail itself of the means of obtain- it. Desire is moreover extinguished or abated by the inion that the wished for good cannot be obtained in propor- n as the soul's uneasiness is cured or allayed by that con- leration. [For the rest, I have found what I stated to you out uneasiness in this celebrated English author, whose ews I often relate to you. I was a little in difficulty as to definition of the English word uneasiness. But the French nslator[1] whose skill in the fulfilment of this task cannot called in question, remarks at the foot of the page (chap. , § 6,) that by this word the English author understands state of a man not at his ease, the lack of *ease* and of tran- illity of soul, which in this regard is purely passive, and that must be translated by the (French) word *inquietude*, which es not express exactly the same idea, but approaches it very arly. This caution (he adds) is above all needful with ard to the following chapter, "Of Power," in which the hor reasons much upon this kind of uneasiness; for if you uld not attach to this word the idea which has just been icated, it would be impossible exactly to understand the tters treated of in this chapter and which are the most portant and delicate in the entire work.]

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[1] Schaarschmidt translates the French "velleité" by the German "Wille neigung," *i.e.* inclination of will. The term is borrowed from the Scholas "velleitas," and is here equivalent to *imperfect volition* (*imperfecta volit* or that condition of the soul in which the will, though not in a state of indiff

Th. [The translator is right and the reading of his excellent hor shows me that this consideration of *uneasiness* is a capi- point, in which this author has particularly shown his pene- ing and profound mind. For this reason I gave it some ention, and after having well considered the matter, it al- st appears to me that the (French) word *inquietude* (*restless-*), if it does not express quite the meaning of the author, ertheless sufficiently agrees with the nature of the thing; that the (English) word uneasiness, if it indicated a dis- sure, fretfulness (*chagrin*), inconvenience, in a word some ctive pain, would not suit his meaning. For I should pre-

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has not as yet sufficient force to pass over into action (*volitio*). *Cf. New ys*, Bk. II., chap. 21, § 5 *sq.*, also § 30, Th. — Tr.

[1] M. Pierre Coste. — Tr.

fer to say that in the desire in itself there is rather a dispos tion and preparation for pain than pain itself. It is true th this perception sometimes differs from that which is in pai only more or less, but it is the degree which is the essence pain, for it is a notable perception. The same is also seen the difference between appetite and hunger, for when th stomach's irritation becomes too strong it is uncomfortable, that we must also apply here our doctrine of perceptions t small to be perceived, for if that which goes on in us when have appetite and desire, were great enough, it would cause pain. Hence the infinitely wise author of our being arrang it for our good, when he so arranged it that we should oft be in ignorance and among confused perceptions, in order act more promptly by instinct, and in order not to be disturb by too distinct sensations of a multitude of objects, which not recur immediately and the nature of which could not go to obtain their ends. How many insects we swallow witho noticing them, how many persons we see who, having a t penetrating odor, are annoying, and how many disgusting o jects we should see if our vision were penetrating enough. is also for the sake of this skill that nature has given us t stimuli of desire, like the rudiments or elements of pain, or to speak, of semi-pains, or (if you wish to speak extravagant in order to express yourself more forcibly) the little imperce tible pains, in order that we might *enjoy the advantage of e* without its inconvenience; for otherwise if this percepti were too distinct, we would always be miserable while awa ing the good, while this continual victory over these sem pains which are felt in pursuing our desire and satisfying some way this appetite, or this longing, gives us a quantity semi-pleasures, whose continuity and mass (as in the continui of the impulse of a heavy body which falls and acquires i petuosity) becomes at last a complete and genuine pleasu And finally, without these semi-pains there would be no ple ure at all, nor any means of perceiving that something ai and relieves us while there are some obstacles which preve us from putting ourselves at ease. It is furthermore in th that we recognize the affinity of pleasure and pain which S rates in Plato's "Phædo,"[1] noticed when his feet itched. Th nsideration of little aids or little releases and imperceptible liverances from the fixed tendency, whose result at last is a table pleasure, serves also to give a more distinct knowlge of the confused idea which we have, and ought to have, *of asure* and *of pain;* just as the sensation of heat and of light ults from a quantity of little motions which express those objects, as I said above (chap. 9, § 13) and differ from them ly in appearance and because we ourselves are not conscious this analysis: while many to-day believe that our ideas of ise-qualities differ *toto genere* from notions and from all that es on in objects, and are something primitive and inexplible, and indeed arbitrary, as if God made the soul sensible of atever seems good to him, instead of what goes on in the ly, a view which is far removed from the true analysis of our as. But to return to *uneasiness,* that is to say to the little perceptible solicitations which keep us always in suspense; se are confused determinations, so that often we do not w what we lack, while in the case of the *inclinations and sions* we at least know what we ask for, although confused ceptions enter also into their methods of acting, and the sions themselves also cause this uneasiness or longing. se impulses are like so many little springs which try to ase themselves, and which make our machine go. And I e already remarked above that it is in this way that we are er indifferent, when we most appear to be so, for example, urning to the right rather than to the left at the end of a . For the side we take arises from these insensible deterations, mixed with the actions of objects and the interior of body, which makes us find ourselves more at ease in the one ne other manner of bestirring ourselves. The pendulum of ock is called *Unruhe* in German, *i.e.* uneasiness. We may that the same condition exists in our body which can r be perfectly at ease; because if it might be so, a new ession of objects, a slight change in the organs, in the ves- and in the viscera would at once alter the balance and e them to make some slight effort to put themselves again he best state possible: this produces a perpetual strife, h causes, so to speak, the *uneasiness* of our clock, so that appellation is quite to my taste.]

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[1] *Phædo*, 60 B. — TR.

6. *Ph.* *Joy* is a pleasure felt by the soul when it consid-

ers the possession of a present or future good as assured, and we are *in possession* of a good when it is so in our power tha we can enjoy it when we wish.

Th. [Languages lack words sufficiently suitable to distinguish kindred notions. Perhaps the Latin *gaudium* draw nearer this definition of joy than *lætitia*, which is also translated by the word *joy;* but then it appears to me to signify state in which pleasure predominates in us, for during the profoundest sorrow and in the midst of the most poignant grie one may take some pleasure as in drinking or hearing music but the unpleasant feeling predominates and so in the mids of the most acute pain the mind can be joyful, as in the cas of the martyrs.]

§ 8. *Ph. Sorrow* is an uneasiness of the soul when i thinks of a lost good which it might have enjoyed a longe time, or when it is tormented by an actually present evil.

Th. [Not only the actual presence, but also the fear o coming evil may make one sad, so that I believe the definition of joy and sorrow which I have just given agree the bette with usage. As to *uneasiness*, there is in pain and consequentl in sorrow something more: and there is uneasiness even i joy, for it makes a man awake, active, full of hope to go farthe *Joy* has been capable of causing death by excess of emotio and then there was in it still more than uneasiness.]

§ 9. *Ph. Hope* is the contentment of the soul which thinks the enjoyment which it is destined probably to have in a thin suited to give it pleasure. § 10. And *fear* is an uneasine of the soul, at the thought of a future evil that may happen.

Th. [If uneasiness signifies trouble I admit that it alwa accompanies fear; but taking it as this insensible spur whic pushes us on, it may be applied also to hope. The Stoi regarded the passions as thoughts; thus hope was to them th thought of a future good, and fear the thought of a futu evil. But I prefer to say that the passions are neither sat factions nor displeasures, nor thoughts, but tendencies rather modifications of the tendency, which come from thoug or feeling and which are accompanied by pleasure or displea ure.]

§ 11. *Ph. Despair* is the thought one has that a go cannot be obtained, causing sometimes pain and sometim rest.

Th. [Despair taken as passion is a kind of strong tendency hich finds itself suddenly arrested, a condition which causes violent struggle and much displeasure. But when despair accompanied with rest and indolence it is rather a thought ian a passion.]

§ 12. *Ph.* *Anger* is the uneasiness or discomposure we feel ter having received some injury, and which is accompanied ith a present desire to avenge ourselves.

Th. [Anger seems to be something simpler and more gen-al, since animals are susceptible to it to whom no injury is ne. There is in anger a violent effort tending to annul the il. The desire for vengeance may remain when one is in ld blood and has hatred rather than anger.]

§ 13. *Ph.* *Envy* is the uneasiness (displeasure) of the soul iich arises from the consideration of a good we desire, but iich another possesses, who in our opinion should not have d it in preference to ourselves.

Th. [According to this notion envy would be always a iiseworthy passion and always based upon justice, at least our opinion. But I know not whether men do not often bear ry towards recognized merit, which they would not hesitate treat ill, if they had the power. They even bear envy rards persons regarding a good which they themselves uld not care to have. They would be content to see them rived of it, without thinking of profiting from their despoil-nts, and indeed without being able to hope for it. For ie good things are like pictures painted *in fresco*, which can lestroyed, but which cannot be taken away.]

17. *Ph.* Most of the passions make in many persons ressions on the body, and cause therein various changes, these changes are not always sensible; for example, *shame* ch is a felt uneasiness of the soul when it comes to consider it has done something indecent or which may lessen the esti-e others have of us, is not always accompanied by blushing.

h. [If men would study to observe more closely the ex-al movements which accompany the passions, it would be ult to conceal them. As for shame, it is worthy of consid-ion that modest persons sometimes feel movements similar iose of shame, when they are witnesses only of an indecent on.]

CHAPTER XXI

OF POWER AND FREEDOM

§ 1. *Ph.* [The mind observing how one thing ceases to be, and how another which was not before comes to exist, and concluding that there will be in the future parallel cases, produced by parallel agents, comes to consider in one thing the possibility that one of its simple ideas may be changed, and in another the possibility of producing that change, and in tha way the mind forms the idea of power.]

Th. [If *power* corresponds to the Latin *potentia*, it is oppose to act, and the passage from power to act is *change*. This i what Aristotle understands by the word *motion*, when he says that it is the *act* or perhaps the *actuation* of that which is i power. It may be said then that *power* in general is the possibility of change. Now change or the act of this possibility being action in one subject and passion in another, ther will be two powers, one passive, the other active. The *activ* may be called *faculty*, and perhaps the passive might be calle *capacity* or *receptivity*. It is true the active power is sometime taken in a more complete sense, when besides the simple facult there is a *tendency;* and it is thus that I take it in my *dynamic* considerations.[2] The word *force* might be appropriated to in particular; and force would be either entelechy or effort for entelechy (although Aristotle takes it so generally that comprises also all action and all effort) appears to me mo appropriate to *primitive acting forces*, and that of *effort* to th *derivative*. There is even also a kind of *passive power* mo particular and more endowed with reality; namely, that whic is in matter in which there is not only mobility, which is t

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[1] *Cf. Phys.* III., 1, 201^a 10; *Metaphys.* K, 9, 1065^b 16. — Tr.

[2] *Cf. De primæ philosophiæ emendatione*, etc., published in the "Ac Eruditorum," 1694, p. 110 *sq.*, Gerhardt, Vol. 4, pp. 468–470; Erdmann, 121–122; Jacques, Vol. 1, pp. 452–454, in French; translation, Duncan, *Phil Works of Leibnitz*, pp. 68–70; also, *Beilage*, May, 1702, appended by Gerhar to the letter to Fabri, Gerhardt, *Leibnizens Math. Schriften*, Vol. 6, pp. 98 especially p. 101; *Specimen dynumicum*, published in the "Acta Eru torum," April, 1695, Gerhardt, *Leibnizens Math. Schriften*, Vol. 6, pp. 234 — Tr.

apacity or receptivity for motion, but also *resistance*, which ncludes *impenetrability* and *inertia*. Entelechies, *i.e.* primitive r substantial tendencies, when accompanied by perception, are ouls.]

§ 3. *Ph.* The idea of power expresses some kind of relation. ut what one of our ideas of whatever kind does not include some *elation?* Our ideas of extension, of duration, of number, do hey not all contain in themselves a secret relation of parts? he same thing is noticed in a still more visible manner in gure and motion. Sensible qualities, what are they but the owers of different bodies in relation to our perception, and o they not depend in themselves upon bulk, figure, the con-xture and motion of the parts? which puts a kind of rela-on between them. Thus our idea of power may very well be laced in my opinion among the other simple ideas.

Th. [At bottom the ideas which we have just enumerated e composite; those of sensible qualities hold their place nong the simple ideas only because of our ignorance, and the hers which we know distinctly, keep their place only by an dulgence which it were better they should not have. It is most the same with regard to the common axioms, which ight be and which deservedly should be proved among the eorems, and which are allowed to pass nevertheless as ioms, as if they were primitive truths. This indulgence es more harm than we think. It is true we are not always a position to do without it.]

§ 4. *Ph.* If we consider the matter carefully, bodies do not nish us by means of the senses with so clear and so distinct idea of active power as that which we have from reflection on the workings of our mind. There are, I believe, but two ds of actions of which we have an idea, viz.: thinking and tion. Of thought, body gives us no idea, and it is only ough reflection that we have it. Neither have we from the ly any idea of the beginning of motion.

Th. [These considerations are most excellent, and although e I take *thought* in a manner so general that it includes all ception, I do not wish to dispute the use of terms.]

h. When the body is itself in motion, this motion in the y is an action rather than a passion; but when a billiard- yields at the stroke of the cue, it is not an action of the l, but a simple passion.

Th. [There is something to be said upon that point, for the bodies did not receive motion in the impact, according to the laws observed therein, if they already had not motion in themselves. But pass we now this point.]

Ph. The same is true when it pushes another ball which it finds in its way and puts in motion; it only communicates to it the motion it had received, and itself loses just as much.

Th. [I see that this erroneous view, which the Cartesians have brought into fashion, as if bodies lost as much motion as they give to others, which is to-day overthrown by experiments and by reason, and abandoned moreover by the illustrious author of "The Search after Truth,"[1] who has published a brief treatise for the express purpose of retracting it, still gives scholars occasion to be mistaken in constructing trains of reasoning upon so ruinous a foundation.]

Ph. The transfer of motion gives us only a very obscure idea of an active power of motion in the body so long as we see nothing else than that the body transfers motion but does not in any way produce it.

Th. [I do not know whether they here maintain that motion passes from subject to subject, and that the same motion (*iden numero*) is transferred. I know that some, contrary to the view of the entire scholastic philosophy, have gone that far among others the Jesuit, Father Casati. But I doubt whethe this is your view or that of your scholarly friends, ordinarily fa removed from such fancies. If, however, the same motion i not transferred, we must admit that a new motion is produce in the body which receives it: thus the one which give would really act, although it would be passive at the sam time while losing its force. For although it is not true tha the body loses as much motion as it gives, it is always tru that it loses some motion and that it loses as much force as i gives, as I have elsewhere explained, so that it is always nec essary to admit in it force or active power. I understan power in the more noble sense which I have explained a littl before, in which tendency is united with faculty. Nevertheles am always agreed with you, that the clearest idea of ctive power comes to us from the mind. It is also only n things which are analogous to the mind, that is to say, in ntelechies, for matter properly speaking shows only passive ower.]

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[1] Malebranche, *De la Recherche de la Vérité*, 1674. The "brief treatise referred to is entitled: *Traité de la communication du movement*, and m be found in Vol. 3 of the German translation of Malebranche's works, Hall 1777–80. — TR.

§ 5. *Ph.* We find in ourselves the power to begin or not to egin, to continue or to end many actions of our soul and nany motions of our body, and this simply by a thought or hoice of our mind, which determines and commands, so to peak, that such a particular action be done or not done. This ower we call *Will.* The actual use of this power is called *Volition;* the cessation or production of the action which fol- ows such a command of the soul, is called *voluntary,* and all ction done without such direction of the soul is called *invol- ntary.*

Th. [I find all that very good and just. However, to speak nore fairly, and to go perhaps a little farther, I will say that *olition* is the effort or tendency (*conatus*) towards what is onsidered good and against that considered bad, so that this endency results immediately from the consciousness one has f them. And the corollary of this definition is this cele- rated axiom: that will and power united, action follows, nce from all tendency action follows when it is not hin- ered. Thus not only the internal voluntary actions of our inds follow from this *conatus,* but also the external, that is to y, the voluntary movements of our bodies, in virtue of the nion of the soul and the body, the reason of which I have sewhere given. There are besides the efforts resulting from e insensible perceptions, of which we are not conscious, hich I prefer to call *appetitions* rather than volitions (al- ough there are also apperceptible appetitions), for those tions alone are called voluntary of which we may be con- ious, and upon which our reflection may fall when they fol- w the consideration of good and evil.]

Ph. The power of perceiving we call *understanding:* it in- udes the perception of ideas, the perception of the signifi- tion of signs, and, finally, the perception of the agreement disagreement existing between any of our ideas.

Th. [We perceive many things within and without us, ich we do not understand, and we *understand* them, when we have distinct ideas of them, together with the power of reflection and of drawing from them necessary truths. Animals therefore have no understanding, at least in this sense, although they have the faculty of perceiving impressions more remarkable and more distinct, as the boar perceives a person who shouts at him, and goes straight for this person, of whom he had had before only a cloudy perception, but confused as of all other objects which fell under his eyes, and whose rays struck his crystalline humor. Thus in my view the *understanding* corresponds to what among the Latins is called *intellectus*, and the exercise of this faculty is called *intellection*, which is a distinct perception united with the faculty of reflection, which is not in animals. Every perception united with this faculty is a thought, which I do not accord to the animals any more than understanding, so that we may say there is intellection when thought is distinct. For the rest, the perception of the signification of signs does not deserve to be distinguished here from the perception of the ideas signified.]

§ 6. *Ph.* It is commonly said that the understanding and the will are two *faculties* of the soul, a term suitable enough if used as we ought to use all words, taking care that they cause no confusion to spring up in the thoughts of men, as I suspect has happened here in the case of the soul. And when we are told that the will is that superior faculty of the soul which rules and orders all things, that it is or is not free, that it determines the lower faculties, that it follows the *dictamen* of the understanding; although these expressions may be understood in a sense clear and distinct, I fear, however, that they have caused to arise in many persons the confused idea of so many distinct *agents* acting distinctly in us.

Th. The question has exercised the scholastics a long time whether there is a real distinction between the soul and its faculties, and whether one faculty is really distinct from another. The Realists have said yes, and the Nominalists no, and the same question has been agitated as to the reality of many other *abstract entities*, which should meet the sam fate. But I do not think we need here decide this question and plunge into these difficulties, although I remember tha piscopius[1] found it of such importance that he thought he ould not maintain the freedom of man if the faculties of the oul were real entities. However, if they were real and disnct entities, they can pass for real *agents* only in extravagant peech. It is not the faculties or qualities which act, but subances by means of the faculties.

§ 8. *Ph.* So long as man has the power to think or to efrain from thinking, to move or not to move according to ie preference or choice of his own mind, so long he is *free*.

Th. [The term *freedom* is very ambiguous. There is freeom of right and of fact. As regards that of *right* a slave is ot at all free, a subject is not wholly free, but a poor man is free as a rich man. Freedom of *fact* consists either in the ower *to will as one ought*, or in the power to do what one wills. is of the *freedom to do* of which you speak, and it has its egrees and varieties. *Generally* he who has the most means the freest to do what he wills: but *in particular* freedom is iderstood of the use of things which are ordinarily in our ower, and above all, of the free use of our body. Thus the rison and the diseases which prevent us from giving to our ody and our limbs the motion we wish and which we can dinarily give them detract from our freedom: thus a prisoner not at all free, and a paralytic has no free use of his limbs. *reedom of will* is furthermore understood in two different nses. The first is when it is opposed to the imperfection or e slavery of the spirit, which is a coaction or constraint, but ternal like that arising from the passions. The other sense s place when freedom is opposed to necessity. In the first nse the Stoics said that the wise man alone is free; and in t the spirit is not at all free when it is filled with a great ssion, for one cannot then will as he should, that is to say, th the deliberation which is requisite. Thus God alone is rfectly free, and created spirits are so, only to the extent at they are superior to their passions. And this freedom icerns properly our understanding. But the freedom of rit, opposed to necessity, concerns the naked will, and in so as it is distinguished from the understanding. This is

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Simon Episcopius, 1583–1643. The piece referred to is the *De libero arbi-* , particularly the second chapter; it is found in his *Opera Theologica*, Vol. 198, Div. II., 2d ed. London and Rotterdam, 1665–1678, 2 vols., fol. — Tr.

what is called *free-will* (*franc-arbitre*) and it consists in this that we will that the strongest reasons or impressions which the understanding presents to the will do not prevent the ac of the will from being contingent, and do not give it an absolute, and, so to speak, metaphysical necessity. And it is i this sense that I am accustomed to say that the understandin can determine the will, according to the prevalence of perceptions and reasons, in a manner which, even where it is certai and infallible, inclines without compelling.[1]

§ 9. *Ph.* It is well also to consider that no one has ye thought of taking as a *free agent* a ball, whether in motion b the stroke of a racket or at rest. This is because we do no conceive of a ball as thinking or as having any volition, whic makes it prefer motion to rest.

Th. [If that were *free* which acts without hindrance, a ba once in motion in a *level horizon* would be a free agent. Bu Aristotle has already well remarked that to call acts free, w demand not only that they be *spontaneous*, but further tha they be *deliberate*.[2]]

Ph. This is why we consider the motion or rest of bal under the idea of a *necessary* thing.

Th. [The appellation *necessary* requires as much circumspe-tion as that of *free*. This conditional truth, viz.: *supposing t ball to be in motion in a level horizon without hindrance, it w continue the same motion*, may pass as in some sort necessar although at bottom this consequence is not entirely geometr-cal, being only presumptive, so to speak, and based upon t wisdom of God who changes not his influence without reason, which it is presumed is not at present to be foun But this absolute proposition: *the ball here is now in motion this plane*, is only a *contingent truth*, and in this sense the ba is a *contingent, not a free, agent*.]

§ 10. *Ph.* Suppose that a man, while in a profound sleep, carried into a room, where is a person, whom he much longs e and to meet, and that the door is locked upon him; this an wakes up and is delighted to find himself with this pern, and lives thus in the room with pleasure. I think no one esumes to doubt that he remains *voluntarily* in that place. et he is not at liberty to go out if he wishes. Thus freedom not an idea belonging to volition.

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[1] *Cf. Essais de Théodicée*, Pt. I., §§ 51, 52, Gerhardt, 6, 130–131; Erdma 517; also Eduard Dillmann, *Eine neue Darstellung der Leibnizischen Mon enlehre auf Grund der Quellen*, pp. 416 *sq.*; Leipzig: O. R. Reisland, 1891.—Tr.

[2] *Cf. Eth. Nic.*, III., 4, *ad fin.*, 5; 1111 *sq.*; translation by F. H. Pete M.A., London: C. Kegan Paul & Co., 1881.—Tr.

Th. [I find this example very well chosen to show that in a nse, an act or a state may be *voluntary* without being *free*. ill when philosophers and theologians dispute upon *free will*, ey have altogether another sense in view.]

§ 11. *Ph.* Freedom is wanting when paralysis prevents the nbs from obeying the determination of the mind, although, the case of the paralytic even, to remain sitting still might voluntary so long as he prefers sitting still to changing s place. *Voluntary* is not then opposed to *necessary*, but to *voluntary*.

Th. [This precision of expression would be agreeable enough me, but usage is far from it; and those who oppose freedom necessity, mean to speak not of external acts, but of the act elf of willing.]

§ 12. *Ph.* A man awake is no more at liberty to think or t to think, than he is at liberty to prevent or not to prevent body from touching any other body. But to transfer his oughts from one idea to another is often within his determation. And in that case he is as much at liberty as regards ideas, as he is as regards the bodies upon which he rests, ng able to transfer himself from one to the other as the cy arises. There are, however, ideas, which, like certain odily) movements, are so fixed in the mind, that, in certain cumstances, you cannot avoid them whatever effort you ke. A man upon the rack is not at liberty to put aside the a of pain, and sometimes a violent passion acts upon our nd as the most violent wind acts upon our body.

Th. [There is order and connection in ideas, as there is in dily) movements, for the one corresponds perfectly to the er, although the determination in the movements be unconous and free, or with choice in the thinking being whom good evil only cause to incline without forcing him. For the soul, le representing bodies, preserves its (own) perfections, and ough dependent upon the body (in seizing the good) in the

voluntary acts, it is independent and makes the body depen
upon itself in others. But this *dependence* is only *metaphysica*
and consists in the considerations which God has for the or
while ruling the other, or rather for both, according to th
original perfections of each; whilst *physical dependence* woul
consist in an immediate influence, which the one would receiv
from the other on which it depends. For the rest, there com
to us involuntary thoughts, partly from outside by means c
objects which strike our senses, and partly from within b
reason of the impressions (often insensible) which remai
from preceding perceptions whose action continues and whic
mingle with those which appear for the first time. As regard
these we are passive, and even when we wake up, *imag*
(under which designation I include not only the representa
tions of figures, but also those of sounds and other sensib
qualities) come to us, as in dreams, without being calle
The German language calls them *fliegende Gedanken*, that i
flying thoughts (*pensées volantes*), which are not within ou
control, and among which there are sometimes many absurd
ties which raise scruples in good people, and furnish exerci
to casuists and directors of consciences. It is as in the mag
lantern, which makes figures appear upon the wall accordi
as something within is turned. But our mind, perceivi
some image which recurs to it, may say: stop there, and, so
speak, arrest it. Moreover, the mind enters, as seems go
to itself, into certain *trains of thought*, which lead it on
others. But this is true only when internal or external impre
sions do not at all prevail. It is true that in this thing m
differ very much, both according to their temperament a
according as they have exercised their control, so that one c
master impressions where another lets them go.

§ 13. *Ph. Necessity* takes place wherever thought is whol
wanting. And this necessity, when found, is an agent capab
of volition, and when the commencement or continuation
any action is contrary to the preference of his mind, I call
compulsion; when the hindering or stopping of an action
contrary to his volition, I may call it *restraint.* Agents whi
have absolutely neither thought nor volition are in all respe
necessary agents.

Th. [It seems to me that, properly speaking, althou tions are contingent, *necessity* should not be opposed to tion, but to *contingency*, as I have already remarked in § 9, that necessity should not be confounded with determina- , for there is no less connection or determination in thoughts in movements (to be determined being a wholly different g from being pushed or forced by compulsion). And if do not always notice the reason which determines us or which we determine ourselves, it is because we are as e capable ourselves of perceiving the entire play of our d and its thoughts, very often imperceptible and confused, e are of recognizing all the machinery which nature causes lay in the body. Thus, if by necessity, you mean the cer- determination of man, which a perfect knowledge of all circumstances within and without could make a perfect l foresee, it is certain that thoughts being as determined e motions they represent, every free act would be a neces- act. But necessity must be distinguished from contingency ough determined; and not only are contingent truths not l necessary, but further, their connections are not always n absolutely necessary character; for it must be admitted there is some difference in the manner of determining een consequences which take place in necessary matter those which take place in contingent matter. Geometrical metaphysical consequences necessitate, but physical and l incline without necessitating; the physical even having thing of the moral and voluntary as related to God, since aws of movement have no other necessity than that of (the ciple, or choice, of—Tr.) the best. Now God chooses freely ugh he is determined to choose the best; and as bodies selves do not choose (God having chosen for them), usage lecided that they be called *necessary agents*, to which I am pposed, provided we do not confound the necessary and letermined, and do not suppose that free beings act in determinate manner, an error which has prevailed in cer- minds and which destroys the most important truths, even fundamental axiom: that *nothing happens without reason*, out which neither the existence of God nor other great s could be satisfactorily demonstrated. As for *compulsion* well to distinguish two kinds, the one physical, as when n is carried in spite of himself into prison, or thrown down a precipice; the other moral, as, for example, the co straint of a greater evil, and this act,[1] although in a sen forced, does not cease to be voluntary.[2] One may be compell also, by the consideration of a greater good, as when a man tempted by proposing to him a too great advantage, although is not customary to call this constraint.]

§ 14. *Ph.* Let us see now if we cannot put an end to th long agitated, and in my opinion very unreasonable, becau unintelligible, question: *Whether man's will is free or no.*

Th. [There is much reason for the exclamation with respe to the strange manner of men who torment themselves by ag tating badly conceived questions: *They seek for what they kno and know not for what they seek.*]

Ph. Freedom, which is only a power, belongs only to agen and cannot be an attribute or modification of the will, which itself nothing else than a power.

Th. [You are right, sir, according to the proper use words. One can, however, in some measure excuse receiv usage. Thus it is customary to attribute power to heat or other qualities, *i.e.* to the body in so far as possessed of th quality: and in like manner the intent here is to ask if man free in willing.]

§ 15. *Ph.* *Freedom* is the power a man has of doing or n doing any act conformably to his will.

Th. If men understood only that by freedom, when they a whether the will, or the arbiter is free, their question would truly absurd. But you will see presently what they ask, a indeed I have already touched upon it. It is true but another principle, that they (at least many) do not cease ask for the absurd and the impossible, in desiring a freed of equilibrium absolutely imaginary and impracticable, a which indeed would not serve them, were it possible for th to have it, *i.e.* to have the freedom of willing against all t impressions which can come from the understanding, whi would destroy true freedom together with the reason, and lowe us below the beasts.

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[1] Gerhardt reads: "et cette action, quoyque forcée en quelque faço Erdmann and Jacques: "car l'action, qu'elle fait faire," *i.e.* for the act wh it makes you do. — TR.

[2] *Cf.* Kant, *Kritik d. prakt. Vernunft,* Th. I., Bd. I., Hpst. 1, § 6, An translation by T. K. Abbott, 4th ed., revised and enlarged. London: Longm 1889. — TR.

17. *Ph.* He who should say that the power of speaking cts the power of singing, and that the power of singing[1] ʏs or disobeys the power of speaking, would express him- in as proper and intelligent a manner, as he who says, as been usual, that the will directs the understanding, and the understanding obeys or disobeys the will. § 18. ertheless this manner of speaking has prevailed, and has ed, if I am not mistaken, much confusion, although the er of thinking operates no more upon the power of choos- and the contrary, than the power of singing upon that of cing. § 19. I grant that this or that thought may furnish the occasion of exercising his power of choosing and that mind's choice may be the cause of its actually thinking on or that thing, just as actually singing a certain tune may he occasion of dancing such a dance.

h. [There is a little more than the furnishing of occasions, e there is some dependence; for you can will only what find to be good, and according as the faculty of under- ding is improved the choice of the will is better, as on the r hand, according as man has *vigor of will* he determines thoughts according to his choice, instead of being deter- ed and carried away by involuntary perceptions.]

h. Powers are relations, not *agents*.

h. [If the essential faculties are only relations and add ing whatever to the essence, the qualities and the faculties are accidental or subject to change are something else, and nay say of these last that the one often depends upon the r in the exercise of their functions.]

21. *Ph.* In my opinion the question should not be, whether will is free, — that is to speak in a very improper manner, t whether the *man is free*. That granted, I say that so as any one can by the direction or choice of his mind er the existence of an action to its non-existence, and the rary, *i.e.* can make it exist or not exist according as he , so long he is *free*. And we can scarcely say how we l possibly conceive a being freer than so far as he is able what he wills. So that man seems to be as free in refer-

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[1] erhardt reads: "parler," a MS. or typographical error; *cf.* Locke, s. *Works* (Bohn's ed.), Vol. 1, p. 370. Erdmann and Jacques read: ıter," which the translation follows. — Tr.

ence to those actions which depend upon this power he fin in himself, as it is possible for freedom to make him, if I ma so express myself.

Th. [When we reason about the freedom of the will or upo free-will (*franc arbitre*), we do not ask if man can do wh he wills, but if there is enough independence in his will itse We do not ask if he has free limbs or elbow-room, but if has a free spirit, and in what it consists. In this respect o intelligence might be freer than another, and the supren intelligence will exist in perfect freedom of which creatur are not at all capable.]

§ 22. *Ph.* Men naturally inquisitive, and who love to remo as much as they can from their minds the thought of gui although it be by reducing themselves to a state worse th that of a fatal necessity, are not, however, satisfied with th Unless freedom extends still farther, it is not to their tast and in their opinion it is a very good proof that man is not all wholly free, unless he has as well the freedom to will as th of doing what he wills. § 23. Concerning which I belie that man cannot be free in reference to this particular act willing an action which is in his power, when this action h been once proposed to his mind. The reason therein is whol manifest, for the action depending upon his will, must un voidably exist or not exist, and its existence or non-exi ence following without fail exactly the determination a choice of his will, he cannot avoid willing the existence non-existence of this action.

Th. [I should think he could suspend his choice, and th this happens very often; above all, when other thoughts int rupt deliberation: thus, although the action deliberated up necessarily exists or not, it does not at all follow that y must necessarily determine upon its existence or non-existenc for non-existence may happen again for want of resolutio Thus the Areopagites actually released the man whose ca they had found too difficult to decide, deferring it to a te far distant, and taking a hundred years to consider it.]

Ph. In making man free in this fashion, I mean in maki the act of willing depend upon his will, another will or an rior faculty of volition is necessary in order to determine t acts of this will, and another to determine that, and thus inity; for wherever you stop, the actions of the last will ıld not be free.

Th. [It is true you speak incorrectly when you speak as if willed to will. We do not will to will, but we will to do, l if we willed to will, we should will to will to will, and s would go on to infinity: meanwhile it is not necessary to ıceal that by some voluntary acts we contribute often inditly to other voluntary acts, and although one cannot will at he will, as he cannot even judge what he will,[1] he can, vever, so act in advance that he judges or wills at the time at he would wish to be able to will or judge to-day. Men ıch themselves to persons, lectures, and considerations favore to a certain party, they give no attention to that which ıes from the opposite party, and by these addresses and a usand others which they employ, most frequently without inite design and without thought, they succeed in deceiving mselves or at least in changing and converting or perting themselves according to what they meet.]

25. *Ph.* Since then it is evident that man is not at liby to *will to will or not*, the next thing demanded is, *whether n is at liberty to will which of the two he pleases*, for example, *ion or rest?* But this question is in itself so visibly absurd t it may suffice to convince any one who will reflect that edom in no case concerns the will. For to ask whether a man ree to will what he pleases, motion or rest, speech or silence, o ask whether a man can will what he wills, or be pleased h that with which he is pleased, a question which, in my ıion, needs no answer.

h. [It is true, nevertheless, that men find here a difficulty ch deserves to be removed. They say that after having wn and considered all, it is still within their power to will only what pleases them the most, but furthermore wholly contrary, merely to show their freedom. But you must sider that this caprice or obstinacy, or at least this reason ch hinders them from following other reasons, also enters the balance and makes that please them which would rwise not do so, so that choice is always determined by eption. They do not then will what they would, but what pleases, although the will can contribute indirectly and as it were from afar to make anything pleasurable or otherwise, as I have already remarked. And as men scarcely recognize all these separate considerations, it is not astonishing that the mind is so perplexed in regard to this matter which has so many concealed windings.]

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[1] he French is: "et quoyqu' on ne puisse point vouloir ce qu' on veut, ıe on ne peut pas même juger ce qu' on veut." — Tr.

§ 29. *Ph.* When men ask what it is that determines the will, the true reply is, the mind. If this answer is not satisfactory, it is plain that the meaning of the question reduces to this: *What moves the mind on each particular occasion to determine to such particular motion or rest its general power of directing its faculties towards motion or rest?* To this I reply that what leads us to remain in the same state or continue the same action, is solely the present *satisfaction* we find therein On the other hand, the motive which incites to change i always some *uneasiness.*

Th. [This *uneasiness,* as I have shown (in the precedin chapter), is not always a displeasure, as *ease* when found i not always a satisfaction or pleasure. It is often an insensibl perception, which cannot be distinguished or recognized, whicl makes us lean to one side rather than the other, without ou being able to give a reason for so doing.]

§ 30. *Ph. Will* and *desire* should not be confounded: a ma desires to be freed from the gout, but understanding that th removal of this pain may cause the transfer of a dangerou humor into some more vital part, his will cannot be determine to any action, which may serve to remove this pain.

Th. [This desire is a kind of an inclination of will (*velleité*) as compared with a complete volition. We should will, fo example, if there were no greater evil to be feared, if w obtained what we wish, or if perhaps there were a greate good to be hoped for if we went forward. But we can sa that man wills to be delivered from the gout with a certai degree of volition, but which does not always go on to the las effort. This volition is called Velleity when it includes som imperfection or impotency.]

§ 31. *Ph.* It is well to consider, however, that what dete mines the will to act is not the greater good, as is ordinaril supposed, but rather some actual uneasiness, and ordinaril

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[1] *Cf. New Essays*, Book. II., chap. 20, § 6, Ph. and note, *ante*, p. 168. — T

at which is most pressing. We may give it the name of *esire,* which is really an uneasiness of mind, caused by the ant of some absent good, over and above the desire of being eed from pain. All absent good does not produce a pain oportionate to the degree of excellence which it has or which e acknowledge it to have; whilst all pain causes a desire ual to itself; because the absence of good is not always an il, as is the presence of pain. Therefore we can look upon d consider an absent good without pain. But in proportion there is anywhere desire, so is there uneasiness. § 32. Who there who has not felt in desire what the wise man says hope, "that being deferred it makes the heart sick" rov. 13:12)? Rachel cries "Give me children, or I die" en. 30:1). § 34. When man is perfectly content with e state he is in, or when he is absolutely free from all easiness, what will can remain to him but to continue that state? Thus the wise Author of our being has t in men the inconvenience of hunger and thirst and other ural desires, in order to arouse and determine their wills to e proper conservation and continuation of their species. t is better to marry than to burn," says St. Paul (1 Cor. 7 : 9). true it is that the present sensation of a little burning has re power over us than the attractions of greater pleasures ked at in the distance. § 35. It is true that this maxim, is the good and the greatest good which determines the l, is so firmly established that I am not at all surprised at ing formerly regarded it as beyond doubt. But after strict uiry I am forced to conclude that the good and the greatest d, although judged and acknowledged such, does not determ e the will; unless coming to desire it in a manner proporal to its excellence this desire makes us uneasy at our rivation of it. Suppose a man convinced of the utility of ue so far as to see that it is necessary to the man who pros anything great in this world, or hopes to be happy in other: but until this man hungers and thirsts after rightness, his will will never be determined to any action in ch for this excellent good, and any other uneasiness com in the way will drag his will to other things. On the r hand, suppose a man given to wine considers that by ing the life he leads he is ruining his health and wasting his

property, that he is coming to be dishonored in the world, t
bring upon himself disease and to fall at last into povert
until he no longer has wherewith to satisfy this passion f
drink which so strongly possesses him: nevertheless, th
returns of uneasiness which he feels in being absent from h
companions in debauch, drag him to the tavern at the hours h
has been wont to go there, though at the time he has befo
his eyes the loss of his health and estate, and perhaps eve
that of the happiness of the other life, happiness which h
cannot regard as a good inconsiderable in itself, since h
admits that it is much more excellent than the pleasure
drinking or the vain chatter of a company of debauchees. It
not then for want of casting the eyes upon the sovereign go
that he persists in this intemperance; for he sees it an
acknowledges its excellence, to the extent that during t
time that intervenes between his drinking hours, he resolv
to apply himself to the search for this sovereign good; b
when the uneasiness of being deprived of his accustom
pleasure comes to torment him, this good which he acknow
edges more excellent than that of drinking, has no long
power over his mind, and it is this actual uneasiness whi
determines his will to the action to which it is accustom
and which thereby making very strong impressions preva
again at the first occasion, although at the same time he bin
himself, so to speak, by secret promises no longer to do t
same thing, and imagines that this will be the last time th
he will act against his highest interest. Thus he finds hims
from time to time reduced to saying:

Video meliora proboque,
Deteriora sequor.[1]

I see the better way, I approve it, and I take the wo
This sentence which we acknowledge as true, and which
only too well confirmed by a constant experience, is easy
understand in this way, and there is perhaps no other sens
which it can be taken.

Th. [There is something beautiful and solid in these con
erations. But I would not have you believe on that acco
that we must abandon those ancient axioms that the

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[1] Ovid, *Metamorph.* 7:21.—TR.

ollows the greatest good, or that it flies from the greatest evil
iat it perceives. The source of the little application to true
oods arises mainly from the fact that in matters and on the
ccasions where the senses act but little, the greater part of our
ioughts are, so to speak, surd[1] (I call them *cogitationes cœcæ*
Latin) *i.e.* void of perception and feeling, and consisting
the wholly empty employment of characters, as happens in
e case of those who make algebraic calculations without con-
dering from time to time that the geometrical figures in
iestion and the words ordinarily produce the same effect in
iis regard as the characters of arithmetic or algebra. One
ten reasons in words without having quite the same object
mind. Now this knowledge cannot move; something living
necessary in order to arouse us. But thus it is that men
ost frequently think of God, of virtue, of happiness; they
eak and reason without definite ideas. Not that they can-
t have them, since they are in their mind. But they do not
ouble themselves to press their analysis. Sometimes they
ve ideas of an absent good or evil, but very feeble. It is
en no wonder that they are scarcely affected. Thus if we
efer the bad it is because we perceive the good which it
cludes without perceiving either the bad therein or the good
the contrary consideration. We assume and believe, or
her we make the statement merely upon another's belief, or
most upon belief in the memory of our past reasonings, that
greatest good is on the better side, or the greatest evil on
other. But when we do not look at these at all, our
oughts and reasonings contrary to the feeling are a kind of
ttacism[2] which furnishes nothing at present to the mind;
l if we take no measures to remedy it, it is idle talk, as I
e already remarked above (Bk. I., chap. 2, § 11), and the
st beautiful precepts of morality together with the best
es of prudence take effect only in a soul which is *sensible*
her *directly*, or, because that cannot always be, at least *in-*
ectly, as I shall show presently) and which is no longer
sible to that which is contrary thereto. Cicero well says

The French is: "sourdes." *Cf.* p. 193, near the end of Th. — Tr.

Littré thus defines "psittacisme," quoting this passage and the one further
37, Th., by way of illustration: "État d'esprit dans lequel on ne pense ou
arle qu'en perroquet," *i.e.* a state of the mind in which one thinks or
s only as a parrot. — Tr.

somewhere[1] that if our eyes could see the beauty of virtue, we should love it warmly; but that not being at all the case, no anything equivalent, we must not be astonished if in the struggle between the flesh and the spirit, the spirit so many time yields, since it does not clearly perceive its advantages. Th struggle is nothing else than the opposition of different tendencies, which spring from confused and distinct thoughts Confused thoughts often make themselves clearly felt, bu our distinct thoughts are ordinarily clear only potentially they might be clear, if we would apply ourselves to th penetration of the sense of the words or characters; but no doing so, either through negligence, or because of the shortnes of time, we oppose mere words, or at least, too feeble image to living feelings. I knew a man influential in church an state, whose infirmities made him resolve to diet; but he admitted that he had not been able to resist the odor of th viands, which, passing before his apartment, were carried t others. It is doubtless a disgraceful weakness, but it is jus what men have done. But if the mind made good use of it advantages, it would triumph grandly. It would be necessar to begin with education, which should be so regulated as t render true good and true evil as sensible as possible, by investing the notions which are formed of them with circumstances more suited to this design; and a full-grown man wh lacks this excellent education should commence rather lat than never, to seek pleasures enlightened and reasonable, i order to oppose them to those of the senses, which are confused but impressive. And in fact, divine grace itself is pleasure[2] which gives light. Thus when a man is in the mid of good impulses, he ought to make laws and regulations f ıe future, and execute them rigorously, tearing himself away rom those causes able to corrupt him, either brusquely or radually, according to the nature of the circumstances. A ɔurney expressly undertaken will cure a lover; a retreat will raw us from the companions who support us in some bad in- ination. Francis of Borgia, General of the Jesuits, who has t last been canonized, being wont to drink largely when he as a man in high life, reduced himself little by little upon a nall scale, when he thought of retiring (from the world) by ausing a drop of wax to fall daily into the bottle which he as wont to empty. To dangerous sensibilities we shall op- ɔse some other innocent sensibility, as agriculture, garden- g; we shall shun idleness; we shall collect curiosities of ıture and art; we shall make experiments and researches; e shall engage in some indispensable occupation, if we have ɔne, or in conversation, or useful and agreeable reading. ı a word, we must profit from good impulses as from the ɔice of God which summons us to make effective resolutions. nd as we cannot always analyze the notions of true goods ıd true evils until we perceive the pleasure and pain they in- ude, we must once for all make this law in order to be moved them: to attend to and follow henceforth the conclusions reason once for all understood, although perceived after- ard and ordinarily only by *thoughts surd*[1] merely, and desti- te of sense attractions; and this in order to put yourselves ıally in possession of control over *the passions* as well as of the *sensible inclinations* or uneasinesses, by acquiring this habit acting according to reason, which makes virtue pleasant, d as it were natural. But it is not our business here to give d teach the precepts of morality, or the spiritual directions d address for the exercise of true piety; it is enough that considering the procedure of our soul, we see the source of r weaknesses, the knowledge of which gives, at the same ıe, that of their remedies.]

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[1] Perhaps in *De Fin.*, 2, 16, § 52: "Oculorum, inquit Plato, est in no sensus acerrimus, quibus sapientiam non cernimus. Quam illa ardentes amo excitaret sui, si videretur," where, however, the discourse is concerned wi the particular virtue of wisdom, rather than with virtue in general. The p sage of Plato referred to is in the *Phædrus*, 250 D. *Cf.* also, *De Off.*, 2, "Quis non admiretur splendorem pulchritudinemque virtutis"; and *De O* 1, 5: "Formam quidem ipsam, Marce fili, et tanquam faciem honesti vid quæ si oculis cerneretur, mirabiles amores excitaret sapientiæ." — TR.

[2] *Cf.* Spinoza, *Ethica*, Part V., Props., 32, 33, *sq.*; translation by R. H. Elwes, *The Chief Works of Benedict de Spinoza*, Vol. 2, pp. 263 *sq.* (Boh Philos. Library), London: George Bell & Sons, 1884. The best edition Spinoza's Works is that of Van Vloten and Land, The Hague, 1882–1883. —

§ 36. *Ph.* The present uneasiness which presses us, works y upon the will, and naturally determines it in view of that ppiness to which we all aim in all our actions; because every regards pain and *uneasiness* (*i.e.* the restlessness, or rather onvenience, which prevents us from being at our ease) as incompatible with happiness. A little pain suffices to corrupt all the pleasures we enjoy. Consequently that which determines incessantly the choice of our will to the succeeding action will always be the removing of pain, as long as we feel any touch of it; this removal being the first step towards happiness.

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[1] *Cf.* p. 191, near the beginning of Th., and note.—Tr.

Th. If you take your *uneasiness* or *inquietude* as a veritable displeasure, in this sense I do not admit that it is the sole incentive. Most frequently these are the little insensible perceptions which might be called imperceptible pains if the notion of *pain* did not include *apperception.* These little impulsions consist in delivering themselves continually from little obstacles towards which our nature works without thinking of them. This *uneasiness* consists in truth in this, that we feel without knowing it, which fact makes us act in passion as well as when we appear most tranquil; for we are never without some action and motion, which arises only from the fact that nature always labors to put herself more at her ease And this it is which determines also before all consultation in *the cases which appear to us the most indifferent,* because we ar never perfectly in suspense and we cannot be exactly equall divided between two cases. Now if these elements of pai (which degenerate into veritable pain or displeasure sometime when they overgrow) were true pains, we should always b miserable in pursuing the good that we seek with uneasines and spirit. But it is wholly the contrary; and as I hav already said above (§ 6 of the preceding chapter), the ma of these continual little successes of nature, which puts it mo and more at ease in reaching for the good and enjoying i image, or lessening the feeling of pain, is already a conside able pleasure, and often worth more than the enjoyment eve of the good; and *very far from being obliged to regard this u easiness as incompatible with happiness,* I find that uneasiness essential to the happiness of created beings which never co sists in complete possession,[1] — this makes them insensible, a it were stupid, — but in a progress continuous and uninterpted towards the greatest good, which cannot fail to be acnpanied by a desire, or at least, a continual uneasiness, but iich, as I have just explained, does not go so far as to inconnience, but limits itself to those elements or rudiments of in, partly *unconscious*, which do not cease to be sufficient to rve as an incentive and to arouse the will; as does appetite a man who is well when it does not go to that inconvenience iich makes us impatient and torments us by a too great atchment to the idea of what we lack. These *appetitions*, small great, are what are called in the schools *motus primo primi*, d are truly the first steps which nature makes us take not much towards happiness as towards joy, for they relate only the present; but experience and reason teach us to rule ese appetitions and to control them so that they may conce to happiness. I have already spoken to this effect (Book chap. 2, § 3). The appetitions are like the natural tenncy of the stone, which goes the most direct, but not always best path towards the centre of the earth, not being able see beforehand that it will meet rocks upon which it will eak in pieces, whilst it would approach its end more directly it had mind and the means of turning aside from them. us it is that going straight towards present pleasure we netimes fall over the precipice of misery. Hence, reason poses thereto images of the greatest good or evil to come, l a firm resolution and habit of thinking before acting, and n of following what shall have been recognized as the best,

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[1] *Cf.* the famous passage of Lessing, 1729–1781, regarding the 'search af truth, rather than its possession,' in the *Theolog. Streitschriften*, Eine Dupl 1778, I. *ad fin.*, *Werke*, Bd. 10, s. 19, Stuttgart, 1869: "Nicht die Wahrheit, deren Besitz irgend ein Mensch ist, oder zu sein vermeint, sondern die a richtige Mühe, die er angewandt hat, hinter die Wahrheit zu kommen, ma den Werth des Menschen. Denn nicht durch den Besitz, sondern durch

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hforschung der Wahrheit erweitern sich seine Kräfte, worin allein seine ıer wachsende Vollkommenheit besteht. Der Besitz macht ruhig, träge, z . . ."; *i.e.* "Not the truth, in possession of which at any time a man is, hinks he is, but the genuine effort he has made to discover the truth, contes the worth of the man. For not through possession, but through the ch after the truth, are his powers expanded, wherein alone consists his ever ving perfection. Possession makes (him) quiet, lazy, proud . . ."

he real significance of this famous passage in relation to the problem of wledge is not that knowledge is impossible, *i.e.* Agnosticism, for this is tly the meaning of the term; but rather that the attainment of truth is ible, and that the human mind, having in its very constitution infinite ıents and a capacity for an infinite ideal, can never rest satisfied with any ent attainment or form of expression as final, but must continue to strive the perfect truth as embodied in the infinite. *Cf.* an article by the slator, entitled "Revelation, Inspiration, and Authority," in "The Andover ew," April, 1891. — Tr.

even when the sensible reasons of our conclusions are no longer present in the mind, and consist of scarcely more than feeble impressions or even of *surd thoughts*, which give words or signs destitute of an actual explanation, so that all consists in the: *Consider it well*, and in the: *Be mindful;* the first in order to the making of laws, the second for their following, even when you do not think of the reason which has called them into existence. It is, however, well to think of them as much as possible, in order that the soul may be filled with a rational joy and a pleasure accompanied with light.]

§ 37. *Ph.* These precautions are doubtless so much the more necessary as the idea of an absent good can counterbalance the feeling of some uneasiness or displeasure by which we are at present tormented, only so far as this good arouses any desire in us. How many men there are to whose minds the unspeakable joys of paradise are represented by lively pictures which they recognize as possible and probable, who nevertheless would willingly content themselves with the happiness which they enjoy in this world. It is the uneasiness of their present desire getting the better of them and bearing them rapidly towards the pleasures of this life which determines their wills to seek them: and during all this time, they are wholly insensible to the goods of the other life.

Th. [This arises in part from the fact that men very often are but little persuaded; and, although they say they are, a hidden unbelief reigns in the depths of their souls; for they have never understood the excellent reasons which verify this immortality of souls, worthy of the justice of God, which is the foundation of true religion, or rather they no longer remember that they understood them, one or the other of which conditions however is necessary in order to conviction. Few men indeed think that the future life, as true religion and indeed true reason teaches it, is *possible*, and they are still farther from thinking it probable, not to say *certain*. All that they do think about it is but a *psittacism*, or gross and vain images after the Mahometan fashion, in which they themselves see little likelihood. For they are very far from being moved by them, as (according to report) were the soldiers of the Prince of the Assassins, the Old Man of the Moun-

in,[1] who were carried away when fast asleep into a place full
delights, where, believing themselves in the paradise of Ma-
met, they were imbued by the angels or counterfeit saints with
ch opinions as this prince desired, and whence after having
en stupefied anew they were carried to the place whence they
d been taken; this emboldened them afterwards to undertake
erything, even attempts upon the lives of princes, enemies of
eir chief. I do not know whether this Lord[2] or Old Man of the
ountain was injured; for not a few great princes may be named
iom he had caused to be assassinated, although you may see
the English historians the letter, attributed to him, exon-
ating King Richard I. of the assassination of a Count or
ince of Palestine,[3] whom this Old Man of the Mountain ad-
tted he had had killed because he had been insulted by him.

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[1] The usual translation of "Sheikh-al Jebal," the title of the supreme ruler
the Assassins, a secret society whose distinguishing feature was the employ-
nt of secret assassination against all enemies; a practice introduced by
ssan Ben Sabbah, the first chief of the sect. Otherwise the principles of
society were the same as those of the Ismaelites, viz. 1. No fixed rules
religion or morality, all actions indifferent, internal disposition alone of
ue. 2. Belief that the Immams of Ismael's line were now invisible, hence
licit obedience on part of true believers due to their vicegerents on earth.
Allegorical interpretation of the Koran, defending or rejecting any doctrine
pleasure, as occasion required.

The society was made up of seven ranks or orders: 1. The *Sheikh*; 2. the
ial-Kirbal, or grand-priors; 3. the *Dais*, or priors; 4. *Refiks*, associates
initiated, as were the former, into all the secret doctrines; 5. the *Fedais*,
evoted ones," a band of youths uninitiated and blindly obedient to the
ef; 6. *Lasiks*, or novices; 7. common people, laborers, and mechanics. On
se was enjoined the most rigid observance of the Koran. The initiated
arded all positive religion and morality as worthless. The *Fedais* were the
ssins proper. Whenever the chief wished for their service he had them
xicated with *hashish*, or the hemp-plant, and transported into his splendid
dens, where they were surrounded with every sensual pleasure, and by this
taste of Paradise which the chief alone could grant led to obey his slightest
nmand implicitly, even to the surrender of their own lives. From this cir-
nstance they were called *Hashishin*, or hemp-eaters. This word the Euro-
ns changed into Assassins, and thus it was transplanted into the Western
guages with the signification of murderers. See Von Hammer, *Geschichte*
Assassinen, 1818; Michaud, *Histoire des Croisades*, 2, pp. 465–484;
Valpole, *The Ansayrii*, or Assassins, 3 vols., 1851; Gayard, *Fragments*
tifs à la Doctrine des Ismaelis, 1874; De Sacy, *Memoires de l' Institut*, 4,
, discusses the etymology fully.—Tr.

Gerhardt reads: "Seigneur ou Senior (Vieux) de la Montagne."—Tr.

The Margrave Conrad of Montferrat, one of Saladin's brave adversaries.
Gibbon, *Decline and Fall*, Milman's ed., chap. 59, and note 74, also Milman's
; Weil, *Gesch. d. Chalifen*, Vol. 3, p. 423; Wilken, *Gesch. d. Kreuzzüge*,
4, p. 485 *sq.*—Tr.

Although that may be so, it was perhaps because of his great zeal for his religion that this Prince of the Assassins wished to give his people a favorable idea of paradise which should always accompany their thoughts of it and prevent them from being surd; without claiming on that account that they should believe that they had been in paradise itself. But supposing he had made this claim, it would not necessarily be astonishing if these pious frauds had been more efficacious than the truth badly managed. Yet nothing would be stronger than truth if we devoted ourselves to its complete knowledge and cultivation; and we should have in it without doubt the means of strongly influencing men. When I consider how much ambition or avarice can accomplish in all those who once place themselves in this course of life, almost destitute of sensible and present attractions, I despair of nothing, and I hold that virtue would be infinitely more effective accompanied as it is by so many solid goods, if some happy revolution of the human race brought it for a day into demand and made it as it were fashionable. It is very certain that we could accustom the youth to find their greatest pleasure in the practice of virtue. And even grown up men could make themselves laws and a habit of conforming to them, which would influence them as strongly and with as much uneasiness if they were turned aside from them, as a drunken man would feel when he is prevented from going to the ale-house. I am very happy to add these considerations upon the possibility and even upon the ease of the remedies for our evils, in order not to assist in discouraging men from the pursuit of true goods by the mere exposition of our weaknesses.]

§ 39. *Ph.* [Nearly everything consists in making constant the *desire* for true good.] And it rarely happens that any voluntary action is produced in us unless some *desire* accompanies it; this is why *will* and *desire* are so often confounded. But we must not regard the *uneasiness* which makes a part of or which at least accompanies most of the other passions, as entirely excluded in this case. For hatred, fear, anger, envy, shame, have each their uneasiness, and thereby influence the will. I doubt if any one of these passions exists entirely alone. I believe indeed that it would be difficult to find any passion unaccompanied by *desire.* I am sure, however, that wherever re is uneasiness there is desire. And as our eternity does depend on the present moment, we look beyond the present, atever be the pleasures which we actually enjoy, and desire, ompanying these glances anticipative of the future, always pels the will to follow; so that even in the midst of joy t which maintains the action upon which the present pleas- depends, is the desire to continue it, and the fear of being rived of it, and whenever a greater uneasiness than that es possession of the mind it immediately determines the d to a new action and the present pleasure is neglected.

Th. [Many perceptions and inclinations concur in perfect ition, which is the result of their conflict. There are e imperceptible by themselves, whose mass makes an un- iness which impels us without our seeing the cause; there many joined together which tend to some object or which ove it, and then it is desire or fear accompanied also by uneasiness, but which does not always go so far as pleasure lispleasure.[1] Finally, there are impulses really accompanied pleasure and by pain, and all these perceptions are either sensations or ideas resting upon some past sensation companied or not by memory), which renewing the attrac- s these same images had in the preceding sensations, renew the former impulses in proportion to the vividness of the . From all these impulses results at last the *prevailing* rt which makes the will complete. But the desires and dencies which are perceived are often also called *voli- s* though *less complete*, whether they prevail and influence ot. It is thus easy to believe that volition can have but e force without *desire* and without *aversion* (*fuite*); for I believe we may call the opposite of desire. Uneasi- exists not only in the troublesome passions, as hatred, , anger, envy, shame, but further in their opposites, as , hope, favor, and glory. We may say that whenever e is desire, there will be uneasiness; but the contrary is always true, because often one is in a state of uneasiness out knowing what he wants, and then there is no full- vn desire.]

40. *Ph.* Ordinarily the most pressing of the uneasinesses

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[1] Gerhardt adds: "ou deplaisir." — Tr.

which are judged capable of being removed at that time det
mines the will to action.

Th. As the result of the balance makes the final det
mination, I should think it may happen that the most pre
ing uneasiness does not prevail; for though it might prev
over each of the opposed tendencies taken by themselves, t
others united may overcome it. The mind can indeed u
skilfully the *dichotomies* in order to cause sometimes the o
sometimes the others, to prevail, as in an assembly we c
cause one party to prevail by plurality of votes, according
we shape the order of the question. It is true the mi
ought to look far into the future; for in the moment
struggle there is no time to use these artifices. All that th
makes an impression, bears hard upon the balance, and hel
to form a *compound direction* almost like that in mechani
and which without some prompt diversion we cannot stop.

Fertur equis auriga nec audit currus habenas.[1]

§ 41. *Ph.* If you ask further *what it is that arouses desi*
I reply, *happiness* and nothing else. *Happiness* and *mise*
are the names of two extremes of whose utmost bounds
are ignorant. It is what “eye hath not seen, ear hath n
heard, and the heart of man hath never conceived.”[2] But bo
make in us lively impressions by means of different kin
of satisfaction and joy, of torment and sorrow, which f
brevity's sake I comprehend under the names of *pleasure* a
pain, both of which happen to the mind as well as to t
body, or, to speak more accurately, pertain only to the mi
although sometimes they originate in the mind upon t
occasion of certain thoughts, and sometimes in the bo
from certain modifications of motion. § 42. Thus happine
taken in its full extent, is *the utmost pleasure* of which we a
capable, as *misery*, taken in the same way, is the great
pain we can feel. And the lowest degree of what can
called happiness is that state, in which delivered from
pain, we enjoy such measure of present pleasure that we ca
not be content with less. We call that a *good* which
adapted to produce in us pleasure, and we call that an *e*
which is adapted to produce in us pain. But it often happe

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[1] Verg. *Georg.* 1 : 514. — Tr.

[2] 1 Cor. 2 : 9. — Tr.

t we do not so name it when one or another of these goods f these evils is found in competition with a greater good greater evil.

h. [I do not know whether the greatest pleasure is possi- I should think rather that it can grow infinitely; for know not how far our knowledge and our organs may carried in all that eternity which awaits us. I should k then that *happiness* is a lasting pleasure; which can- exist without a continual progression to new pleasures. s of two, one of whom will advance incomparably more dly and by greater pleasures than the other, each will be py *in himself* although their happiness will be unequal. piness is then so to speak a road through pleasures, and sure is only a step and an advance towards happiness, the rtest that can be made according to present impressions, not always the best, as I said towards the end of § 36. may miss the true road, in desiring to follow the short- as the stone going straight may meet too soon obstacles ch prevent it from advancing directly towards the centre he earth. Thus we know that it is the reason and the which lead us towards happiness, but that feeling and etite carry us only towards pleasure. Now although sure cannot receive a nominal[1] definition, any more than t or color, it can nevertheless receive like them a causal,[1] I believe that at bottom, pleasure is a feeling of perfec- and pain a feeling of imperfection, provided it be marked ugh to make us capable of perceiving it: for the little nsible perceptions of a perfection or imperfection, which like the elements of pleasure and pain, and of which I have ken so many times, form the inclinations and propensities, not yet the passions themselves. Thus there are insensi- inclinations and these we do not perceive; there are sensi- ones whose existence and object we know, but whose nation we do not feel, and there are confused inclinations h we attribute to the body, although there is always ething corresponding in the mind; finally, there are dis- t inclinations, which reason gives us, whose force and nation we feel; and the pleasures of this kind which are d in the knowledge and production of order and harmony are the most estimable. You are right in saying that i general all these inclinations, passions, pleasures and pain belong only to the mind or soul; I will add, indeed, that thei origin is in the soul itself, taking things in a certain meta physical strictness, but that, nevertheless, you are right in say ing that confused thoughts come from the body, becaus thereupon the consideration of the body — and not that c the soul — furnishes something distinct and explicable. Th good is that which conduces or contributes to pleasure, as th evil is that which contributes to pain. But in collision with greater good, the good of which we should be deprived woul become in truth an evil, in so far as it should contribute t the pain which would spring from it.

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[1] *Cf. New Essays*, Bk. III., chap. 3, § 18.—Tr.

§ 47. *Ph.* The soul has the power of suspending the accon plishment of some of these desires, and is consequently at lil erty to consider one after another and to compare them. I this consists the freedom of man, and what we call, though i my view improperly, free-will; and it is from the bad use w make of it that all this variety of mistakes, errors, and fault proceeds, into which we rush when we determine our will to promptly or too late.

Th. The execution of our desire is suspended or stoppe when this desire is not strong enough to move us and to ove come the trouble or inconvenience there is in satisfying i and this trouble consists sometimes only in an inactivity insensible lassitude which discourages without our takir notice of it, and which is greatest in persons reared in ind lence or whose temperament is phlegmatic, and in those wl are discouraged by age or by poor success. But when desi is strong enough in itself to move, if nothing prevents it, can be stopped by contrary inclinations; whether they consi in a simple propensity which is as it were the element or b ginning of desire, or go as far as desire itself. But as the inclinations, these propensities, and these contrary desires a to be found already in the soul, it does not have them in i power, and consequently it could not resist them in a free ar voluntary way in which the reason can share, if it had r other means of diverting the mind elsewhere. But how do it presume to do it in case of need? For there is the poin especially when one is occupied with a very strong passio is then necessary for the mind to be prepared in advance, ıd to find itself already in process of going from thought to ıought, in order not to hesitate too much at a slippery and ıngerous step. It is well for that reason to accustom ourlves in general not only to think as it were in passing of rtain things in order the better to preserve the freedom of ıe mind; but it is better to accustom ourselves to proceed ethodically, and to fasten ourselves to a train of thoughts hose connection reason and not chance (*i.e.* insensible and sual impressions) makes. And for this purpose it is well om time to time to accustom ourselves to collect our thoughts ıd to raise ourselves above the present tumult of impresons, to go forth, so to speak, from the place where we are, to y to ourselves: "*Dic cur hic? respice finem,*[1] where are we en? or let us come to the purpose,[2] let us come to the point." en would very often need some one officially appointed (as ıilip, the father of Alexander the Great, had) to interrupt d call them to their duty. But in default of such an officer, is well for us to be accustomed to render ourselves this serce. Now being once in a condition to stop the effect of our sires and passions, *i.e.* to suspend (their) action, we can find eans to combat them, whether by contrary desires or inclinans or by diversion, *i.e.* by occupations of another nature. is by these methods and artifices that we become as it were ısters of ourselves, and can make ourselves think and do at e time what we should wish to will and what reason comınds. But it is always through determined paths, and never thout a reason or by means of the imaginary principle of rfect indifference or equilibrium, in which some would make e essence of freedom to consist; as if one could determine nself without a subject, and even against every subject, and directly against the entire *prevalence* of impressions and opensities. *Without a reason,* I say, *i.e.* without the opposin of other inclinations, or without being in advance dissed to turn aside the mind, or without any other means ıally explicable; (to act) otherwise is to recur to the chimer-

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Literally: Why are we here? Consider the end! — Tr.

Erdmann and Jacques omit: "ou venons au propos," found in Ger- lt. — Tr.

ical, as in the empty faculties or occult qualities of the sch lastics, in which there is neither rhyme nor reason.]

§ 48. *Ph.* [I am also for this intelligent determination o the will by what is in the perception and the understanding. To will and do conformably to the final result of a sincer examination is rather a perfection than a defect of our natur And this so far from being a suppression or an abridgemen of freedom, is its greatest perfection and advantage. And th more we are prevented from determining ourselves in thi way, the nearer we are to misery and slavery. In fact, if yo suppose in the mind a perfect and absolute *indifference* whic cannot be determined by the final judgment which it makes c good or evil, you put it in a very imperfect state.

Th. [All this is very much to my taste, and shows tha the mind has not entire and direct power always to stop it desires, else it would never be determined, whatever examin tion it might make, and whatever good reasons or efficaciou sentiments it might have, and it would always remain irres lute and fluctuate eternally between fear and hope. It mus then, after all, be determined, and thus it could itself oppos only *indirectly* its desires, by itself preparing in advance th arms which fight them in time of need; as I have just e plained.]

Ph. But a man is at liberty to lift his hand to his head c to let it lie quiet. He is perfectly indifferent regarding eith of these acts, and it would be an imperfection in him if h lacked that power.

Th. [To speak accurately, one is never indifferent regar ing two alternatives,[1] whatever they may propose; for exan ple, turning to the right or the left,[2] putting the right fo forward (as was necessary in the case of Trimalchio) or t left; for we do the one or the other without thinking of i and this is an indication that a *concurrence* of internal dispos tions and external impressions (although insensible) dete mines us to the side that we take. But the *prevalence* is ve

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[1] After "partis," Gerhardt reads: "quelsqu'on puisse proposer," whi Erdmann and Jacques omit. — Tr.

[2] After "gauche," Gerhardt reads: "de mettre le pied droit devant (comm il falloit chez Trimalcion) ou le gauche," which Erdmann and Jacques om For the allusion *cf.* Petronius, *Satyricon*, chap. 30. — Tr.

mall, and in case of need it is as if we were indifferent in this
espect, since the least sensible subject which presents itself
o us is capable of determining us without difficulty to one
ather than to the other; and although there is a little trouble
n lifting the arm to raise the hand to the head, it is so small
hat we overcome it without difficulty; otherwise, I admit it
ould be a great imperfection if man were less indifferent,
nd if he were wanting in power to determine easily to raise
r not to raise his arm.]

Ph. But it would be as great an imperfection if he had the
ame indifference on all occasions, as when he would defend
is head or his eyes from a blow, by which he saw he was
bout to be struck. [That is to say, it were as easy for him
o stop this movement as others of which we have just spoken,
nd in which he is almost indifferent; for that would make
s influence insufficiently strong and prompt in time of need.
hus determination is useful to us, and, indeed,[1] very often
ecessary; for if we were less determined on every sort of
casion, and as it were insensible to reasons drawn from the
erception of good or evil, we would be without effective
hoice.] And[2] if we were determined by something else than
e final result, which we have formed in our own mind accord-
g as we have judged a certain action good or evil, we should
t be free.

Th. [Nothing is truer, and those who seek another free-
om know not what they ask.]

§ 49. *Ph.* The superior beings who enjoy perfect happi-
ess are determined in the choice of the good more strongly
an we, and yet we have no reason to think them less free
an ourselves.

Th. [For this reason theologians say that these blessed
bstances are confirmed in the good and exempt from all
nger of falling.]

Ph. I believe indeed that, if it were proper for poor finite
eatures like ourselves to judge of what an infinite wisdom
d goodness could do, we could say that God himself can-
t choose what is not good, and that the freedom of this all

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[1] Gerhardt omits "même," which Erdmann and Jacques insert after
t."—Tr.

[2] Gerhardt reads: "et"; Erdmann and Jacques, "comme."—Tr.

powerful being does not hinder him from being determined b what is best.

Th. [I am so persuaded of this truth that I believe we ca boldly assure ourselves of it, wholly poor and finite creature that we are, and that we should be very wrong in doubtin it; for by so doing we should derogate from his wisdom goodness and other infinite perfections. But choice, howeve determined the will be, should not be called necessarily an rigorously absolute; the prevalence of perceived good inclines without necessitating, although considered as a whole this inclination is determinate and never fails to produce it effect.]

§ 50. *Ph.* To be determined by the reason to the best is to be the freest. Who would wish to be foolish for th reason that a fool is less determined by wise reflections tha a man of good sense? If freedom consists in throwing o the yoke of reason, fools and madmen will be the only free men; but I do not believe that for love of such freedom any one would wish to be a fool, save he who is one already.

Th. [There are people to-day who consider it clever t declaim against reason, and to treat it as an inconvenien pedant. I see little books, discourses about nothing, whic make great pretensions, and I sometimes see verses even to beautiful to be employed in such false thoughts. In fac if those who mock at reason spoke in earnest, it would be new kind of extravagance unknown to past centuries. T speak against *reason* is to speak against truth; for reason is concatenation of truths. It is to speak against one's sel against one's good, since the principal point of reason consists in knowing the truth and following the good.]

§ 51. *Ph.* As then the highest perfection of an intelligen being consists in applying himself carefully and constantly t the search for true happiness, so the care we should emplo not to take as real happiness that which is only imaginary, the foundation of our freedom. The more we are bound t the invariable search for *happiness in general which nev ceases to be the object of our desires*, the more our will find itself freed from the necessity of being determined by th desire which bears us towards some particular good, until w have examined whether it agrees with or is opposed to ou true happiness.

Th. The true good should always be the object of our esires, but there is room for doubt whether it is so: for often ie thinks but little of it, and I have remarked here more ian once, that unless appetite is guided by reason it tends to :esent pleasure and not to happiness, *i.e.* to enduring pleas- :e, although it tends to protract it; see § 36 and § 41.

§ 53. *Ph.* If some extreme disturbance takes entire pos- ssion of our mind, as the pain of a cruel torture, we are not iough masters of our mind. But in order to control our issions as much as possible, we should make our mind relish od and evil really and effectively, and not permit an ex- llent and considerable good to escape our mind without leav- g there some relish, until we have excited in ourselves esires proportioned to its excellence so that its absence nders us *uneasy* as well as the fear of losing it when we joy it.

Th. [That sufficiently agrees with the remarks I have st made in §§ 31 and 35, and with what I have said more an once of luminous pleasures, where we understand how ey improve us without putting us in danger of some greater iperfection, as do the confused pleasures of sense, against iich we must guard ourselves, especially when we have not irned by experience that we shall be able surely to avail rselves of them.]

Ph. And let no one say here that he cannot master his pas- ons nor hinder them from breaking loose and forcing him to t; for what he can do before a prince or great man, he can , if he will, when alone or in the presence of God.

Th. [That remark is very good and worthy of frequent lection.]

§ 54. *Ph.* But the different choices men make in the world, ove that the same thing is not equally good for each of em. And if the interests of men did not extend beyond s life, the reason of this diversity which causes, for exam- , these to plunge into luxury and debauchery, and those to fer temperance to pleasure, would arise only from the fact t they placed their happiness in these different things.

Th. [It arises thence even now, although they all have or uld have before their eyes this common object of the ure life. It is true that the consideration of true happiness, even in this life, should suffice to make those who discard it prefer virtue to pleasure; although the obligation would not then be so strong or so decisive. It is also true that men's *tastes* are different, and it is said that we should not dispute about tastes. But as these are only confused perceptions, we should hold fast to them only in the case of objects found to be indifferent and incapable of harm; otherwise, if one had a relish for poisons which would kill him or render him miserable, it would be ridiculous to say that his taste should not be called in question.]

§ 55. *Ph.* If there is nothing to hope for beyond the grave, the inference is certainly very just: *let us eat and drink,* let us enjoy all that gives us pleasure, *for to-morrow we die.*

Th. [There is something to be said, in my opinion, regarding this inference. Aristotle and the Stoics and many other ancient philosophers held another view, and I believe, indeed, that they were right. If there were nothing beyond this life, the peace of the soul and health of the body would not cease to be preferable to the pleasures which would be contrary thereto. And it is no reason whatever for neglecting a good because it will not endure forever. But I admit that there are cases where there would be no means of demonstrating that the most virtuous course would be the most useful. It is then the thought of God and of immortality only which renders the obligations of virtue and justice absolutely indispensable.]

§ 58. *Ph.* It seems to me that the present judgment we make of good and evil is always right. And as for presen happiness or misery, when reflection goes no farther, and al consequences are wholly put aside, man never chooses amiss.

Th. [That is to say, if everything were limited to the pres ent moment, it would not be right to refuse the pleasure whic presents itself. In fact, I remarked above that all pleasure is feeling of perfection. But there are certain perfections whic bring with them greater imperfections. If some one devote himself during his entire life to throwing peas against pins, i order to learn not to fail to make them pierce them, after th example of him to whom Alexander the Great caused to b given as a recompense a bushel of peas, this man would attai a certain perfection, but very slight and unworthy of bein ompared with so many other very necessary perfections hich he would have neglected. Thus the perfection which s found in certain present pleasures should yield especially o the regard for the perfections which are necessary; in order hat we be not plunged into misery, which is the state in hich we go from imperfection to imperfection, from pain to ain. But if there be only the present, it would be necessary o be contented with the perfection which is present, *i.e.* with resent pleasure.]

§ 62. *Ph.* No one would voluntarily render his condition nhappy unless he were led by *false judgments.* I do not peak of mistakes which are the result of invincible error, nd which scarcely deserve the name of false judgment, but f that false judgment which every man must confess in imself to be such. § 63. In the first place, then, the soul mistaken when we compare present pleasure or pain with ne to come which we measure by the different distance at hich they are found with respect to us; like a spendthrift eir who for the present possession of a little something ould renounce a large heritage, which could not fail him. very one should recognize this false judgment, for the future ill become present, and will then have the same advantage nearness. If at the moment the man takes the glass in s hand, the pleasure of drinking were accompanied with the adache and pains in the stomach, which will follow in a w hours, he would not in the least wish to taste the wine. a little difference in time causes so much illusion, with uch stronger reason a greater distance will produce the me effect.

Th. There is some congruity here between the distance places and that of times. But there is also this difference, at visible objects diminish their action upon the sight ry nearly in proportion to their distance, and it is not all the same as regards the future objects which act upon imagination and the mind. Visible rays are straight es proportionally distant, but there are curved lines which er some distance appear to fall into the straight line l are no longer sensibly divergent: thus are made the mptotes, whose apparent interval diverges from the straight es, although in the truth of things they abide eternally separate. We find indeed that at last the appearance of objects does not diminish in proportion to the increase of the distance, for the appearance soon[1] disappears entirely although the distance be not infinite. Thus a short distance of time robs us entirely of the future, as if the object had entirely disappeared. There often remains only the name in the mind and that kind of thoughts of which I have already spoken, which are surd, and incapable of making an impression, unless you have attended to them methodically and habitually.]

Ph. I do not speak here of that kind of false judgment by which what is absent is not only diminished but suddenly annihilated in men's minds, when they enjoy all they can obtain for the present, and then conclude that no evil will happen to them.

Th. [It is another kind of false judgment when the expectation of good or evil to come is annihilated, because the result drawn from the present is denied or made doubtful but beyond that, the error which annihilates the thought of the future is the same thing as this false judgment of which I have already spoken, which arises from a too feeble representation of the future, which is considered only a littl or not at all. For the rest, we might perhaps distinguis here between bad taste and false judgment, for often w do not even question whether the future good should be preferred, and act only upon impression without presuming t come to the examination. But when we think, one of two thing happens, either we do not continue sufficiently our thought and we pass on without pressing the question which ha been touched; or we pursue the examination and form conclusion. And sometimes in each case there remains greate or less self-condemnation: sometimes also there is no *formid opposíti* or scrupulousness at all, whether the mind turns asid at once, or is deceived by its prejudices.]

§ 64.[2] *Ph.* The limited capacity of our mind is the caus of the false judgments we make in comparing good and evil We cannot well enjoy two pleasures at once, and still less ca

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[1] Gerhardt reads after "entierement," "bientost," which Erdmann an Jacques omit. — TR.

[2] Gerhardt. So also Locke, *Philos. Works*, Vol. 1, p. 402 (Bohn ed.). Er mann has § 29: Jacques, § 59. — TR.

e enjoy any pleasure in the time that we are beset by pain.
little bitterness mixed in the cup prevents us from tasting
sweetness. The evil we feel is always the worst; we cry:
ı! any other pain rather than this!

Th. [There is much variety in all this according to men's
mperaments, the force of their feelings, and the habits they
ve contracted. A man who has the gout might be joyful
cause a large fortune fell to him, and a man who swims in
lights, and who might live at his ease upon the earth, is
unged into sadness because of a disgrace at court. The fact
joy and sadness arise from the result or from the *prevalence*
pleasures or pains, when there is a mixture of them. Lean-
r scorned the inconvenience and danger of swimming over
e sea at night, urged on by the attractions of the beautiful
ero.[1] There are people who can neither drink nor eat[2] nor
tisfy other appetites without much pain, on account of some
eakness or inconvenience; and yet they satisfy these appe-
es even beyond necessity and just limits. Others are so
eminate or so delicate that they refuse pleasures with which
y pain, disgust or any inconvenience is mingled. There
e some persons who bravely place themselves beyond pains
d pleasures present and ordinary, and act almost alone
rough fear and hope. Others are so effeminate that they
mplain of the least inconvenience, or run after the least sen-
le and present pleasure nearly like children. These are
e people to whom the present pain or pleasure always ap-
ars the greatest; they are like preachers or panegyrists of
tle judgment, with whom, according to the proverb: *The idol*
the day is always the greatest saint of paradise.[3] But what-
er variety is found among men, it is always true that they
only according to present perceptions, and when the future
presses them, it is always by means of an image they have
it, or by resolution and habit which they have contracted

Cf. Vergil, *Georg.* 3, 258; Ovid, *Heroides*, 18, 19 (17, 18, *Ovid. Opera*, ex
g. Rud. Merkelii, Vol. 1, p. 141 *sq.*, Lipsiæ: B. G. Teubner, 1887); and, for
e final form" of "this poem of love and death," the poem of 340 hexameters
Musæus, the grammarian of the fifth century A.D., an extended abstract of
ch is given in J. A. Symonds' *Studies of the Greek Poets*, Vol. 2, chap. 22,
345–362. New York: Harper & Bros., 1880. — Tr.

Gerhardt reads after "manger," "ou qui ne sauroient satisfaire d'autres
etits," which Erdmann and Jacques omit. — Tr.

The italics are mine. — Tr.

in following even a simple name or other arbitrary character without having any picture or natural sign, because it woul not be without uneasiness, and sometimes without a feeling o chagrin, that they would oppose themselves to a strong resolution already made, and, above all, to a habit.]

§ 65. *Ph.* Men are apt enough to diminish future pleasure and to conclude in themselves that, when it comes to trial, i may perhaps not correspond to the hope it gives nor to th opinion they generally have of it; having often found by thei own experience that not only the pleasures which others hav magnified have appeared to them very insipid, but that wha has caused themselves much pleasure at one time, has offende and displeased them at another.

Th. [These are mainly the reasonings of voluptuaries, bu we ordinarily find that the ambitious and avaricious judg wholly otherwise honors and wealth, although they enjo only moderately, and often, indeed, very little, these sam goods when they possess them, being always occupied in goin farther. I find it a beautiful invention of nature's architec to have rendered men so sensible to what appeals so little t their senses; and if they could not become ambitious or avaricious, it would be difficult in the present state of human natur for them to be able to become virtuous and reasonable enoug to labor for their perfection in the face of the present pleasures which turn them aside from it.

§ 66. *Ph.* As to things good or bad in their consequence and by their aptness to procure us good or evil, we judg them in different ways; either when we judge them incapabl of really doing us as much evil as in fact they do, or whe we judge that while the consequence is important it is not s certain that it may not happen otherwise, or at least that i may not be avoided by some means, as by industry, address change of conduct, repentance.

Th. It seems to me that if by the importance of the consequence we understand that of the consequent, *i.e.* the greatness of the good or evil that may follow, we must fall into th preceding kind of false judgment, in which future good o evil is poorly represented. Thus there remains only the second kind of false judgment, of which we shall presently treat namely, that in which the consequence is doubtful.]

Ph. It would be easy to show in detail that the subterfuges ich I have just alluded to are so many unreasonable judg- nts; but I shall content myself with remarking in general t it is acting directly contrary to reason to hazard a greater od for a less [or to expose[1] ourselves to misery in order to uire a little good or to avoid a little evil], and that, too, on uncertain conjectures and before we have entered upon a e examination.

Th. [As these are two *heterogeneous* considerations (*i.e.* siderations which cannot be compared with each other), t of the greatness of the consequence and that of the atness of the consequent, moralists in desiring to compare m are much perplexed, as appears in the case of those who e treated of probability. The truth is that here as in er estimates *disparate* and heterogeneous and, so to speak, more than one dimension, the greatness of that which is cussed is in reason composed of both estimates, and is like a tangle, in which there are two considerations, viz. that of gth and that of breadth; and, as for the greatness of the sequence and the degrees of probability, we still lack *that t of Logic* which is to estimate them,[2] and the most of the

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Gerhardt reads: "exposer"; Erdmann and Jacques: "opposer." — Tr.

I.e. the Calculus of Probabilities, the founder of which was Pascal, -1662, who developed the mathematical theory of probability in his cor- ondence with Fermat, 1601–1665, concerning certain questions on the itable division of the stakes in games of chance proposed to Pascal by the valier de Méré. *Cf.* I. Todhunter, *History of the Theory of Probability n the time of Pascal to that of Laplace*, pp. 7–21, 8vo, Cambridge and don, 1865. Contributions were made to the theory by many of the dis- uished mathematicians of the period and after, including James Bernoulli, –1705; Huygens (*vid. ante*, p. 150, note 3); Demoivre, 1667–1754, in his *trine of chances, or method of calculating the probabilities of events at* , 3d ed., London, 1756; Laplace, 1749–1827, in his *Théorie analytique des abilités* (Vol. 7 of his *Œurres complétes, publiées sous les auspices de adémie des Sciences*, seven vols., 4to Paris, 1878–1886), since which little advance has been made in the theory; and Poisson, 1781–1840, in *Recherches sur la probabilité des jugements en matières criminelles*, etc., Paris, 1837. Leibnitz became acquainted with Pascal's labors during residence in Paris, 1672–1676; *cf.* Guhrauer, *Leibnitz. Leben*, 1, 113 *sq.* recognized the immense importance of this new "part of Logic," and ght to substitute it for the old and crude casuistry which had so long ailed. In the letter to Bourguet, March 22, 1714, Gerhardt, 3, 570; Erd- n, 723, Leibnitz glances briefly at the historical rise of the calculus of abilities. For the philosophical side of the question, *cf.* J. S. Mill, *Logic*, III., chaps 18, 23, pp. 379 *sq.*, 416 *sq.*, 8th ed., Harper and Bros., New casuists who have written *on probability* have not even under stood its nature, founding it with Aristotle,[1] upon authority instead of founding it as they ought upon likelihood (*vraisem blance*), authority being only one of the reasons which pro duce likelihood.]

§ 67. *Ph.* Here are some of the ordinary causes of thi false judgment. First, *ignorance,* second, *inattention,* when man does not reflect upon that of which he is aware. Thi is an affected and present ignorance which misleads the judg ment as well as the will.

Th. [It is always present, but not always affected; for w do not always take it into our heads to think, when it necessary, of what we know and the memory of which w should recall if we were master of it. *Affected ignorance* always mixed with some attention at the time it is affected; i the future, it is true, it may ordinarily include somewhat of in attention. *The art of thinking in time of need* of what we kno would be one of the most important if it were found; but do not see that men up to the present time have even thougl of forming the elements of it, for the art of memory[2] which so many authors have written is wholly another thing

Ph. If then they bring together in confusion and hastil the reasons from one side and allow through neglect sever sums which ought to enter into the *reckoning* to escape, th

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York, 1881; F. H. Bradley, *The Principles of Logic*, Bk. I., chap. 7, §§ *sq.*, pp. 201 *sq.*, Kegan Paul, Trench and Co., London, 1883; J. Venn, *T Logic of Chance*, 3d ed., Macmillan and Co., London, 1888; W. S. Jevons, *T Principles of Science*, 3d ed., Macmillan and Co., London, 1889. — Tr.

[1] For Aristotle's definition of probability, *cf. Anal. Prior.*, II., 27, 70^a "The probable is a generally admitted proposition. For what is known f the most part as thus happening or not happening, or being or not being, tl is probable"; *cf.* also Wallace, *Outlines*, § 21, who quotes the Greek of t passage. *Rhet.* I., 2, 1357^a34: "For the probable is that which for the mo part happens." Aristotle accordingly rests much more upon experien than upon authority, and Leibnitz has not given his definition accurate "The probable conclusion," says Schaarschmidt, is for Aristotle, "an inco plete induction, whose problematic character he well understood, but did n determine more closely. Later Greek philosophers of a sceptical creed beg to speak of grades of probability, but the moderns have been the first fall upon the fruitful thoughts of a mathematical estimate of probability — Tr.

[2] Mnemonics, the invention of which was ascribed to the poet Simonid of Ceos, 556–469 B.C., perhaps because he was famous for the strength of own memory. *Cf.* Cicero, *De Oratore*, Bk. II., chap. 82. — Tr.

te produces no less false judgments than if it were perfect orance.

Th. [In reality many things must be taken into account, as uld be the case, when the balance of reasons is discussed; the process is almost like that in the account-books of rchants. For no sum must be neglected, each must be perly estimated by itself, they must be properly arranged, finally an exact collection must be made of them. But neglect many weighty points either by its not occurring to o think of them or by passing lightly over them; and we not give each its proper value, like the book-keeper, who careful properly to calculate the columns of each page, who calculated very badly the particular sums of each or posting, before putting them in the columns; this ses the examiners to be deceived, who look principally at t is in the columns. Finally, after having carefully noted they may be deceived in the collection of the sums of the mns and even of the final collection, in which is the sum he sums. Thus we should still need the art of thinking that of estimating probabilities, and besides the knowl- of the value of goods and evils in order properly to loy the art of consequences; and furthermore, attention patience would be necessary after all that, in order to to the conclusion. Finally, a firm and constant resolu- to execute the conclusion arrived at is necessary; and ess, method, particular laws, and habits entirely formed rder to maintain the course in the future, when the con- rations, which have caused it to be taken, are no longer ent to the mind. It is true, thank God, that in what is of greatest importance and which concerns the *summam m,* happiness and misery, there is no need of so much vledge, aid, and address, as it would be necessary to have der properly to judge in a council of state or of war, in bunal of justice, in a medical consultation, in some theo- al or historical controversy, or in some point of mathe- cs or mechanics; but as a recompense more firmness and is necessary, in what concerns this great point of fe- and virtue, in order always to adopt good resolutions to follow them. In a word, for true happiness less ledge suffices with more good will; so that the greatest idiot may attain it as easily as the most learned and most ski ful.]

Ph. You see then that without liberty the understandir would be of no use, and that liberty without understandir would signify nothing. If a man could see what may do hi good or evil without being able to move a step in advan towards the one or in removal from the other, would he the better for the sight? He would be indeed more miserab for this reason, for he would uselessly pine after the good a would fear the evil, that he sees is inevitable; and he who at liberty to run here and there in the midst of perfect dar ness, in what respect is he better than if he were tossed abo at the pleasure of the wind?

Th. [His caprice would be a little better satisfied, but would be in no better condition to meet good or to shun evil

§ 68. *Ph.* Another source of false judgment. Content wi the first pleasure which comes to hand or which custom h rendered agreeable, we do not look farther. This then also an occasion for men to judge wrongly when they do n regard as essential to their happiness that which really is so.

Th. [It seems to me that this false judgment is comprise under the preceding kind where one is mistaken as to t consequences.]

§ 69. *Ph.* The inquiry remains whether *a man* has t power *to change* the pleasure or displeasure which acco panies any particular action. In many cases he can. M may, and ought to, correct their palates and make them acqui a taste. They can change also the taste of the soul. A d consideration, practice, application, custom will bring abo this result. Thus it is that men accustom themselves tobacco, which usage or custom at last makes them find agre able. It is the same as regards virtue. Habits have powerf charms and we cannot depart from them without uneasine You will, perhaps, regard it as a paradox that men can ma things or actions more or less agreeable to themselves, so mu do they neglect this duty.

Th. [I have already made this statement above, § towards the end, and § 47, also towards the end. We c make ourselves will anything and form our taste.]

§ 70. *Ph.* Morality, established upon true foundations, c y determine to virtue: it suffices that infinite happiness l misery after this life are possible. We must admit that ;ood life, joined with the expectation of possible eternal city, is preferable to a bad life, accompanied by the fear of rible misery, or, at least, of the terrible and uncertain hope annihilation. All this is in the highest degree self-evident, iough virtuous men should have only evil to endure in this :ld, and the wicked should taste therein perpetual pleas-, which is ordinarily quite otherwise. For rightly consid-ıg all things, I believe they have the worst part even in ; life.

Th. [Thus were there no life beyond the grave an epicurean would not be the most reasonable. And I rejoice, sir, that rectify what you said to the contrary above, § 55.]

Ph. Who could be so foolish, as to resolve (if he had his ses) to expose himself to a possible danger of being infin-y unhappy so that he has nothing to gain therefrom for self but pure annihilation; instead of putting himself in condition of the good man who has nothing to fear but ihilation, and who has eternal felicity to hope for? I e forborne to speak of the certainty or probability of the ıre state, because I have no other design in this place than how the false judgment of which each should acknowledge self guilty on his own principles.

h. [The wicked are very prone to believe that the other is impossible. But they have no reason for their belief r than that which compels them to limit themselves to t they learn by their senses, and that no one to their vledge has come back from the other world. There was a when upon the same principle we could reject the anti-s, when we were unwilling to unite mathematics and the ılar notions; and we could do so with as much reason as ean now have in rejecting the other life, when we are illing to unite true metaphysics and the notions of the ination. For there are three degrees of notions or ideas, popular, mathematical, metaphysical. The first do not e to make us believe in the antipodes; the first and the ıd do not yet suffice to make us believe in the other l. It is true they furnish already favorable conjectures; if the second established certainly the antipodes before the experience we now have of it (I speak not of the inhal tants, but of the place at least which the knowledge of th roundness of the earth gave them among geographers ar astronomers), the last give no less certitude of another li from this time, and before you have gone to see.]

§ 72. *Ph.* Let us now return to power which is properl the subject of this chapter, liberty being only one form of i but the most important. In order to have more distinct ide of power, it will be neither beside the purpose nor useless t obtain a more exact knowledge of what is called *action.* said at the beginning of our discourse on power that the are two kinds of actions, of which we have some idea, viz motion and thought.[1]

Th. [I thought you could avail yourself of a more gener term than that of *thought,* viz.: that of *perception,* attributin thought only to minds, while perception belongs to all th entelechies. But I do not wish, however, to contest with an one the liberty to take the term thought in the same gener way. And for myself indeed I shall perhaps do so some tim without being aware of it.]

Ph. Now, although we give to those two things the name action, we shall find however that it does not always suit the perfectly, and that there are some examples which we sha recognize rather as *passions.* For in these examples su stance, in which we find movement or thought, receives pure from without the impression through which action is con municated to it, and acts only by the sole capacity it ha of receiving this impression, which is only a *passive powe* Sometimes substance or the agent puts itself in action by i own power, and it is there properly an *active power.*

Th. I have already said that, taking action in metaphysic strictness as that which takes place in substance *spontaneous* and from its own depths, that alone is, properly speaking, substance which is active,[2] for all arises for it from itself aft God; it being impossible for one created substance to ha uence upon another. But taking *action* as an exercise of *ception* and *passion* as its contrary, there is *action* in true stance only when their perception (for I grant it to all) is eloped and becomes more distinct, as there is *passion* only en it becomes more confused; so that in substances capable pleasure and of pain, all action is a step towards pleasure l all passion a step towards pain. As for motion, it is y a real phenomenon, because matter and mass to which tion belongs is not properly speaking a substance. But re is an image of action in motion as there is an image of stance in mass; and in this respect we can say that the y *acts* (*agit*) when there is spontaneity in its change and t it *is passive* (*patit*) when it is urged on or hindered by ther; as in the veritable action or passion of a veritable stance we may take as its *action*, and attribute to itself, change by which it tends to its perfection. And in the e manner we can take as *passion* and attribute to a eign cause the change by which the contrary happens to it; ough this cause is not immediate, because, in the first case, substance itself, and in the second the foreign things serve xplain this change in an intelligible way. I allow bodies an image of substance and action, because that which is posed of parts cannot pass, to speak accurately, as one stance, any more than a flock; but we can say that there herein something substantial, of which the unity, that ch makes it as it were *one* being, comes from thought.]

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[1] Locke has: "thinking," *Philos. Works,* Vol. 1, p. 413 (Bohn's ed.).—T

[2] *Cf. De ipsa natura,* etc., 1698, § 9 *ad fin.;* Gerhardt, 4, 509; Erdma 157; Jacques, 1, 461 (in French); J. H. v. Kirchmann, *Die klein. phil wicht. Schrift. v. G. W. Leibniz* (*Philos. Bibliothek,* Bd. 81), p. 121 (in G man), Erick Koschny, Leipzig, 1879; also Kuno Fischer, *Gesch. d. neuern Phil* Vol. 2 (G. W. Leibniz), p. 334, 3d ed., Heidelberg: C. Winter, 1889. — Tr.

'h. I have thought that the power to receive ideas or ights by the operation of some foreign substance was ed power of thought, although at bottom it is only a *pas-* *power* or a simple capacity making abstraction from the ctions and internal changes which always accompany the ived image, for the expression,[1] which is in the soul is, as ould be, that of a living mirror; but the power which we e of recalling absent ideas at our choice, and of comparing ther those that we think to the purpose, is truly an *active* *er.*

h. [This also agrees with the notions I have just pre- ed, for there is in this a passage to a more perfect state.

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[1] Gerhardt and Erdmann read: "l'expression"; Jacques: "l'impres- '—Tr.

But I should suppose that there is also action in sensations s far as they give us more distinct perceptions and consequentl the opportunity of making remarks and so to speak of deve oping ourselves.]

§ 73. *Ph.* Now I think it appears that we can reduce th primitive and original ideas to this small number: *extensio* *solidity, mobility* (*i.e.* passive power, or rather capacity c being moved), which come to us in the mind by way of refle tion, and finally, *existence, duration,* and *number,* which com to us by the two ways of sensation and reflection; for b these ideas we could explain, if I am not mistaken, the natu of colors, sounds, tastes, odors, and all the other ideas w have, if our faculties were subtile enough to *perceive* the di ferent motions of the minute bodies which produce these se sations.

Th. To speak the truth, I believe that these ideas, whic you here call original and primitive, are for the most part n wholly so, being susceptible in my view of further resolutio but I do not blame you at all, sir, for having limited yourse and for not having pushed the analysis farther. Moreover,[1] believe that if their number can be diminished by this mean it can be increased by adding other ideas more original or a much so. As to the question concerning their arrangement, should consider, following the order of the analysis, exis ence anterior to the others, number to extension, duration t *motivity* or mobility; although this analytic order is n ordinarily that of the occasions which make us think of the The senses furnish us the material for reflection and we shou not even think of thought, if we did not think of somethi else, *i.e.* of the particular things which the senses furnis And I am persuaded that created souls and minds are nev without organs and never without sensations, as they cann reason without characters. Those who have desired to mai tain a complete separation and mode of thinking in the sep rated soul, inexplicable by all that we know, and separat ɔt only from our present experiences, but, what is much ore, from the general order of things, have given too much fluence to so-called strong minds, and have made the finest ıd the grandest truths objects of suspicion to many people, ıving indeed deprived themselves thereby of some excellent eans of proving them, which this order furnishes us.]

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[1] Gerhardt reads: "D'ailleurs je crois que si le nombre en pourroit es diminué par ce moyen, il pourroit estre augmenté," *etc.*; Erdmann and Jacq read: "D'ailleurs si c'est vrai, que le nombre en pourroit être diminué par moyen, je crois qu'il pourroit être augumenté en y ajoutant d'autres Id plus originales ou autant." — Tr.

CHAPTER XXII

OF MIXED MODES

§ 1. *Ph.* Pass we on to the *mixed modes.* I distinguish em from the more *simple modes,* which are composed only of *mple ideas* of the same kind. Moreover, the mixed modes e certain combinations of simple ideas which are not re- ırded as characteristic marks of any real being, which has a ҡed existence, but as scattered and independent ideas which e mind joins together; and they are thereby distinguished om the *complex ideas of substances.*]

Th. [Properly to understand these we must recall our for- er divisions. According to you ideas are simple or complex. ıe complex are either substances, modes, or relations. Modes e either simple (composed of simple ideas of the same kind) mixed. Thus, in your view, there are simple ideas, ideas modes, both simple and mixed, ideas of substances and eas of relations. We could, perhaps, divide the terms or e objects of ideas into abstract and concrete; the abstract to absolute and into those which express relations; the solute into attributes and into modifications; both into nple and composite; the concrete into substances and into bstantial things, made up of or the resultants of true and nple substances.]

§ 2. *Ph.* The mind is purely passive, respecting its simple ɜas, which it receives as sensation and reflection present ɜm to it. But it often acts by itself, indeed, in reference the mixed modes, for it can combine the simple ideas in ıking complex ideas without considering whether they so ıst united in nature. This is why we give to these kinds of ɜas the name of *notion.*

Th. [But reflection which makes us think of simple ideas is often voluntary also, and, moreover, the combinations, which nature has not made, can produce themselves in us, as it were in dreams and reveries by means of memory alone, without the mind's acting more than in the simple ideas. As for the term *notion*, many apply it to all sorts of ideas or conceptions to the original as well as to the derived.]

§ 4. *Ph.* The mark of several ideas combined in one alone is the *name.*

Th. [That means, if they can be combined, in which respec they are often lacking.]

Ph. The crime of killing an old man, not having a name like parricide, is not at first regarded as a complex idea.

Th. [The reason why the murder of an old man has no name is that, the laws not having attached thereto a particular punishment, this name would be useless; but ideas do not depend on names. An ethical author who should invent one for th crime and treat in a special chapter of *Gerontophony*, showin what is due to old men and how it is a barbarous act not t spare them, would not on that account present us with a new idea.]

§ 6. *Ph.* It is always true that the manners and usage of a nation, making combinations familiar to it, cause eac language to have particular terms, which cannot always b translated word for word. Thus *ostracism* among the Greek and *proscriptio* among the Romans were words which othe languages cannot express by equivalent words. Therefor change of customs makes also new words.

Th. [Chance also plays its part, for the French do not us horses as much as other neighboring peoples; but havir abandoned their old word, which corresponded to the *cavalc* of the Italians, they are forced to say by *paraphrase: aller cheval* — to go on horse-back.]

§ 9. *Ph.* We acquire ideas of mixed modes by observatio as when we see two men wrestling; we acquire them also b invention (or a *voluntary union* of simple ideas), thus, he wh invented printing had the idea of it before this art existe We acquire them finally by explaining terms, affecting actio which we have never seen.

Th. [We can further acquire them while dreaming or in state of revery without the combinations being voluntary, for example, when we see in a dream a golden palace without having thought of it before.]

§ 10. *Ph.* The simple ideas which have been most modified are those of thought, motion, and power, whence actions are conceived to flow; for the great business of mankind consists in action; all actions are thoughts or motions. The power or aptitude to do anything which is found in man constitutes the idea which we call *habit,* when this power has been acquired by often doing the same thing; and when we can force it to action upon each occasion that presents itself, we call it *disposition.* Thus, *tenderness* is a disposition to friendship or love.

Th. [By tenderness you understand here, I presume, the tender heart, but elsewhere you seem to me to regard *tenderness* as a quality which one has, as a lover, which renders him very sensible to the good and evil of the object loved. This it s to which it seems to me the chart of affection is moving in he excellent romance *Clelie.*[1] And, as charitable persons love heir neighbor with some degree of tenderness, they are sensible to the good and evil of another, and generally those who have the tender heart have some disposition to love with tenderness.]

Ph. Boldness is the power to do or say before others what you wish without being put out of countenance, a self-confidence, which, in relation to this last part which concerns discourse, had a particular name among the Greeks.

Th. [It would be well to seek a word for this notion, which s here attributed to that of *boldness,* but which is often employed wholly otherwise, as when we say Charles the Bold. Not to be put out of countenance is a strength of mind, but ne which bad men abuse when they have become impudent; s shame is a weakness, but excusable and even praiseworthy n certain circumstances. As for *parrhesia,*[2] which you perhaps understand by the Greek word, it is still attributed to writers who speak the truth without fear, although, then not speaking in the presence of people, they are not liable to be discountenanced.]

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[1] *Clélie, Histoire Romaine,* a romance by Mlle. Scudéry, 1607–1701. The ene is laid early in Roman history; the heroine is Cloelia, who escaped from orsena by swimming the Tiber. — TR.

[2] παρρησία. — TR.

§ 11. *Ph.* As *power* is the source whence proceed all *actions*, the name of *cause* is given to the substances in which these powers reside, when they reduce *their power* to *act;* and they call *effects* the substances produced by this means, or rather the simple ideas (*i.e.* the objects of simple ideas), which, by the *exercise* of power are introduced into a *subject.* Thus the *efficacy* by which a new substance or idea (quality) is produced, is called *action* in the subject exercising this power and *passion* in the subject in which some simple idea (quality) is altered or produced.

Th. [If *power* is taken as the source of action, it means something more than an aptitude or facility, by which power was explained in the preceding chapter; for it includes, besides, tendency as I have already more than once remarked This is why in this sense I have been wont to appropriate to it the term *entelechy*, which is either *primitive* and answers to the soul taken as an abstract thing, or *derivative* as it is conceived in conation (*le conatus*) and in vigor and impetuosity The term *cause* is here understood only as *efficient* cause; bu it is also understood as *final* or the motive, not to speak her of matter and form which are also called causes in the schools I do not know whether we can say that the same being i called action in the agent and passion in the patient, and i thus found in two subjects at once like relation, and, whethe it is not better to say that there are two beings, one in th agent, the other in the patient.]

Ph. Many words which seem to express some action signif only the *cause* and the effect; as creation and annihilatio contain no idea of action or of the manner, but simply of th cause and the thing which is produced.

Th. [I admit that in thinking of creation, we do not co ceive a mode of acting, capable of any detail, which cann indeed there be expedient; but, since we express somethi besides God and the world, for we think that God is the cau and the world the effect, or else that God has produced t world, it is manifest that we think still of action.][1]

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[1] Leibnitz regards the concept of creation in the sense of the origination substances as incapable of further explanation because we can form no id

CHAPTER XXIII

OF OUR COMPLEX IDEAS OF SUBSTANCES

§ 1. *Ph.* The mind notices that a certain number of *simple* *eas* constantly go together, which, presumed to belong to one ing only, are called by one name when *thus united in one* *bject.* Whence it comes that, although this is in truth a ass of many ideas joined together, we are afterwards led by *advertence* to speak of them as a single, simple idea.

Th. [I see nothing in the accepted expressions which de-rves to be taxed with *inadvertence;* and although we recog-ze only one subject and one idea, we do not recognize only e simple idea.]

Ph. Not being able to imagine how these simple ideas can bsist by themselves, we are accustomed to assume something hich sustains them (*substratum*), in which they subsist or hence they result, to which for this effect we give the name *substance.*]

Th.[1] [I believe that there is reason in thus thinking, and e have only to accustom ourselves to it or to assume it, since, first, we conceive several predicates in one and the same bject, and these metaphorical words, *support* (*soutien*) or *sub-ratum* mean only this; so that I do not see why it should use any difficulty. On the contrary, it is rather the *concretum*, wise, warm, shining, which arises in our mind, than the *stractions* or qualities (for these and not the ideas are in e substantial object), as knowledge, heat, light, etc., which e much more difficult to comprehend. We may even doubt hether these accidents are veritable existences, as in fact ey are very often only relations. We know also that it is ese abstractions which cause the greatest difficulties to ring up when we wish to examine them minutely, as those

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the process. For some other expressions concerning it, *cf. La Monado-ie*, § 47, Gerhardt, 6, 614; Erdmann, 708, b.; Letter to Bayle, Gerhardt, 3, ; Erdmann, 191. Gerhardt, 3, 61, and note, says the original is without te; Erdmann gives it 1702. *Cf.* also Dillmann, *Eine neue Darstg. d. Leib-z. Monadenlehre*, p. 451 *sq.* — Tr.

[1] Erdmann has "Ph.," a typographical error. — Tr.

know who are familiar with the subtilties of the scholastics, the most intricate of which falls at once if we will banish abstract existence and resolve to speak ordinarily only by concretes and admit no other terms in scientific demonstrations but those which represent substantial subjects. Thus it is *nodum quaerere in scirpo,*[1] if I may so speak, and reversing things to take the qualities or other abstract terms as the easier and the concrete as something very difficult.]

§ 2. *Ph.* We have no other notion at all of pure *substance* in general, than of an indescribable subject, which is to us altogether unknown and which is supposed to be the support of qualities. We speak like children to one who has no sooner asked them what a certain thing unknown to them is, than they make this reply very satisfactory to their taste that *it is something,* but, which employed in this way, means that they do not know what it is.

Th. [In distinguishing two things in substance, the attributes or predicates, and the common subject of these predicates, it is no wonder that we can conceive nothing particular in this subject. It must be so, indeed, since we have already separated from it all the attributes in which we could conceive any detail. Thus to demand something more in this pure *subject in general* than what is necessary in order to conceive that it is the same thing (for example, which understands and wills, which imagines and reasons), is to demand the impossible, and to act contrary to our own supposition, which has been made in making abstraction and conceiving separately the subject and its qualities or accidents. We could apply the same pretended difficulty to the notion of *being* and to all that is clearer and more primitive; for we could demand of the philosophers what they conceive when conceiving *pure being in general;* for all detail being excluded by that means there will also be little to say, when we are asked what is *pure substance in general.* Thus I believe that the philosophers do not deserve to be laughed at, as is here done, in comparing them with an Indian philosopher, who, being asked upon what the earth rested, replied, upon a great elephant; and then when asked what sustained the elephant, replied, a great tor se; and, at last, when pressed to say upon what the tortoise ted, was compelled to say *something, I know not what.* But s consideration of substance,[1] entirely slender as it appears, not so empty and sterile as you think. It gives rise to ny consequences of greatest importance in philosophy, and ich are capable of giving it a new aspect.]

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[1] To seek a knot in a bulrush, to find a difficulty when there is none. *Cf* Plaut. *Men.* 2, 1, 22 ; Ter. *And.* 5, 4, 38. — TR.

§ 4. *Ph.* We have no clear idea of substance in general, and 5, we have as clear an idea of mind as of body; for the a of corporeal substance in matter is as far from our con- tions as that of spiritual substance. It is almost as the omoter said to this young doctor of law, who cried to him the solemnity, to say *utriusque:* You are right, sir, for you ow as much in the one case as the other.

Th. [As for myself, I believe that this opinion of our igno- ice arises from that which demands a kind of knowledge of ich the object does not admit. The true mark of a clear l distinct notion of an object is the means we have of owing therein many truths by *a priori*[2] proofs, as I have own in a discourse on truths and ideas,[3] published in the ctes de Leipzig" of the year 1684.

§ 12. *Ph.* If our senses were sufficiently penetrating, the isible qualities, for example, the yellow color of gold, would appear, and instead of that we should see a certain admir- e contexture of parts. This appears evident by means of croscopes. This present knowledge is suitable to the state which we find ourselves. A perfect knowledge of things which surround us, is, perhaps, beyond the capacity of every finite being. Our faculties suffice to make us know the Creator, and to instruct us as to our duties. Should our senses become more acute, such change would be incompatible with our nature.

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[1] In Leibnitz's philosophy substance is a unitary, individual, spontane- ly active being, as opposed to the "empty and sterile" conception of Aris- elian scholasticism; *cf. ante*, p. 154 and note. Locke's criticism concerns scholastic conception only. — Tr.

[2] *Cf. New Essays*, Bk. IV., chap. 17, § 1, Th.; *Theodicée*, I., § 44, Gerhardt, 27; Erdmann, 515, b. For a brief critical history of the concepts of the *riori* and the *a posteriori*, *cf.* Rudolph Eucken, *The Fundamental Concepts Modern Philosophic Thought*, pp. 81–91, D. Appleton and Co., New York,); and for Leibnitz's use of the terms, *op. cit.*, p. 82, with the note contain- references to the places where *a priori* occurs in Erdmann's and Foucher Careil's editions of his works. — Tr.

[3] *Meditationes de Cognitione, Veritate et Ideis*, in the "Acta Eruditorum," ., 1684. Gerhardt, 4, 422 *sq.*; Erdmann, 79 *sq.* The passage referred to und in Gerhardt, 425; Erdmann, 80 b.; translation, Duncan, *Philos. Works Leibnitz*, 30. The piece has been translated into German, with notes, by . v. Kirchmann in his *Philos. Bibliothek*, Bd. 81, *Die klein. philos. wicht. riften v. G. W. Leibniz*; Bd. 82, *Erläuterungen.* — Tr.

Th. [All that is true; and I have said something to the same effect above. But the color yellow does not cease t be a reality like the rainbow, and we are apparently destined to a state far beyond the present, and can even go on to the infinite, for there are no elements in the corporeal nature. I there were atoms, as the author appeared to believe in anothe place, perfect knowledge of the body could not be beyon every finite being. For the rest, if some colors or qualitie should disappear from our eyes better armed or become mor penetrating, others would apparently spring into being, an it would require a new growth of our perspicacity to mak these also disappear, and this could go on to infinity, as th actual division of matter effectively proceeds.]

§ 13. *Ph.* I do not know but that one of the great advantages which some spirits have over us consists in the fact tha they can assume to themselves organs of sensation which ar precisely suited to their present design.

Th. [We do this indeed in making for ourselves microscopes; but other creatures can go much farther. And, if w could transform our eyes themselves, which we do effectivel to some extent according as we wish to see near at hand or a a distance, we should be obliged to have something[1] belongin more exclusively to us than they in order to shape them b its means, for it is necessary, at least, that all be done mechanically, because the mind cannot operate immediately upon th body. For the rest, I am also of the opinion that *genii* perceive things in a manner which is somewhat related to ours even if they should have the agreeable advantage which th imaginative Cyrano[2] attributes to some animated natures i e sun, composed of an infinite number of little winged crea- res, which, by transporting themselves according to the mmand of the ruling soul, form all kinds of bodies. There nothing so marvellous that the mechanism of nature cannot oduce it; and I believe that the learned fathers of the urch were right in attributing bodies to the angels.[1]]

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[1] *I.e.* the soul to make use of the capacity of the eyes for accommodatio —TR.

[2] Cyrano de Bergerac, c. 1620—1655, in his philosophical romance, *Histoir comique des états et empires du soleil.* He was author also of the *Histoir comique des états et empires de la lune*, or, as the title is sometimes give *Voyage dans la lune.*—TR.

§ 15. *Ph.* The ideas of thinking and of moving a body, hich we find in that of the mind, can be conceived as clearly d distinctly as those of extension, solidity, and mobility, hich we find in matter.

Th. [As regards the idea of thought I agree. But I am t of this opinion as regards the idea of moving bodies, for, cording to my system of Pre-established Harmony, bodies e so made that being once put in motion, they continue erein, according as the actions of the mind require. This pothesis is intelligible; the other is not.]

Ph. Each act of sensation gives us an equal view of things rporeal and spiritual; for while sight and hearing give me e knowledge that there is some corporeal being without me, know in a way still more certain that there is within me a iritual being which sees and hears.

Th. [It is very well said and very true that the existence the spirit is *more certain* than that of sensible objects.[2]]

§ 19. *Ph.* Spirits as well as bodies can operate only where ey are and in different times and places; thus I can only ribute change of place to all finite spirits.

Th. [I believe that is reasonable, *place* being only an order coexistences.]

Ph. It is only necessary to reflect upon the separation of soul and the body by death to be convinced of the move- nt of the soul.

Th. [The soul might cease to operate in this visible body; l if it could cease thinking all at once, as the author has intained above, it might be separated from the body with- being united to another; thus its separation would be hout movement. But for myself, I believe that it thinks

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Cf. Letters to Des Bosses, Sept. 20, Oct. 4, 1706, Gerhardt, 2, 316, 319; mann, 439. Also Descartes' letters, *passim.* — Tr.

Cf. Descartes, *Meditations*, especially II. and VI. Veitch's translation, ed., pp. 104 *sq.*, 151 *sq.* — Tr.

and feels always, that it is always united to some body, an indeed, that it never leaves entirely and all at once the bod to which it is united.]

§ 21. *Ph.* If anyone says that spirits are not *in loco sed i aliquo ubi* I do not suppose that now we would rely muc upon this method of speaking. But if anyone thinks tha it can receive a reasonable sense, I pray him to express it i language generally intelligible, and to draw therefrom afte wards a reason showing that spirits are not capable of motio

Th. [The schools have three kinds of *Ubeity,* or modes o existing somewhere. The first is called *circumscriptive,* whic they attribute to bodies in space which are there *punctatim,* i such wise that they are measures according to which we ca assign the points of the thing placed corresponding to th points of space. The second is the *definitive,* when we ca define, *i.e.* determine, that the situated thing is in such a space without being able to assign the precise points or the peculia places exclusive of what is there. Thus it has been con sidered that the soul is in the body, not supposing it possibl to assign a precise point at which the soul or some portion o the soul is, without its being also at some other point. More over, many learned men have thus viewed the matter. It i true that Descartes desired to place narrower limits to th soul by locating it properly in the pineal gland.[1] Neverth less he did not dare to say that it is exclusively at a certai point in this gland; and this not being so he gains nothin and it is in this respect precisely as if he gave it the entir body as its prison or place. I believe that nearly the sam statement as that made regarding souls, must be made i respect to the angels, whom the great doctor, a native o Aquino, believed to be in a place only by operation[2] which i my view is not immediate and reduces itself to pre-establishe harmony. The third ubeity is the *repletive,* which is attrib uted to God, who fills all the universe in a still more eminen degree than the disembodied spirits, for he works immediatel on all creatures by continually producing them, while finite rits cannot exercise any immediate influence or operation. o not know whether this doctrine of the schools deserves be ridiculed, as it seems some try to do. But we can ays attribute a kind of movement to souls at least in relan to the bodies with which they are united, or in relation heir mode of perception.]

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[1] *Cf.* Descartes, *Dioptrica,* IV., 1 *sq.; Passiones Animæ,* I., 31 *sq.;* al *Prin. Philos.,* IV., 189, 196, 197, although here the point of contact in t brain of the soul and body is not designated by name. — Tr.

[2] *Cf.* Thomas Aquinas, 1225 or 1227–1274, *Summa Theologica,* Pt. I. Que 52, Article, 2; also Quest. 53. — Tr.

23. *Ph.* If any one says he knows not how he thinks, I ly that he knows no more how the solid particles of the y are united to make an extended whole.

h. [It is difficult enough to explain *cohesion;* but this esion of parts does not appear necessary to make an ended whole, since we can say that matter perfectly subtile fluid constitutes an extension, without the particles being ted the one to the other. But, to speak the truth, I eve that perfect fluidity belongs only to the *primary ter,*[1] *i.e.* matter in the abstract, and, as an original quality, as repose; but not to *secondary matter,* such as is ually found, invested with its derivative qualities; for, I eve that there is no mass, which is of the utmost subtil-; and that there is more or less connection everywhere, ch arises from movements so far as they are conspirant would be disturbed by separation, which cannot take ce without some violence and resistance. For the rest, the ure of perception and thus of thought furnishes a notion the most original conditions. I believe, further, that the trine of substantial unities or monads will throw much t upon it.]

h. As for *cohesion*, many explain it by means of the surs by which two bodies touch, which an ambient fluid[2] (for mple, the air) presses one against another. It is very that the pressure § 24 of an ambient fluid can hinder the lsion of two polished surfaces from one another in a line pendicular to them; but it cannot hinder them from separatby a movement parallel to these surfaces. This is why, here were no other cause of the cohesion of bodies, it ld be easy to separate all their parts, by making them thus slide laterally, taking therefor any plane you wish whic intersects any mass of matter.

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[1] *Cf. ante*, p. 131 and note. — Tr.

[2] Locke's term, *Philos. Works*, Vol. 1, p. 438, § 24 (Bohn's ed.). — Tr.

Th. [Yes, no doubt if all the smooth particles applied t each other were in one and the same plane or in paralle planes; but that not being so nor capable of so being, it i manifest that in trying to make the one slide, you will ac altogether differently upon an infinite number of others, whos plane will make an angle with the first; for you must kno that it is difficult to separate two congruent surfaces, not onl when the direction of the movement of separation is perper dicular, but further when it is oblique to the surfaces. Thu it may be conceived that there are leaves applied to on another in every direction in the polyhedral bodies that natu forms in ores and elsewhere. But I admit that the pressu of the ambient fluid upon smooth surfaces applied to eac other does not suffice to explain the basis of all *cohesion*, fo it is tacitly assumed that the tables applied the one again the other already have cohesion.]

§ 27. *Ph.* I have always supposed that the extension of body was something else than the cohesion of solid particle

Th. [That does not appear to me to agree with your ow preceding explanations. It seems to me that a body in whic there are internal movements or whose particles are in the a of detaching themselves one from another (as I believe ha pens always) cannot be extended. Thus the notion of *exte sion* appears to me wholly different from that of cohesion.]

§ 28. *Ph.* Another idea we have of body is *the power communicating motion by impulse;* and another we have of t soul is *the power of producing motion by thought.* Experien clearly furnishes us each day these two ideas; but if we wi to investigate further how this is done, we find ourselv equally in the dark. For, as regards the communication motion, wherein one body loses as much motion as anoth receives, which is the most ordinary case, we conceive the nothing else than a motion which passes from one body in another; which is, I think, as obscure and as inconceival as the manner in which our mind moves or stops our bodies thought. It is still more difficult to explain the increase motion by means of impulse, which is observed or believed happen in certain cases.

Th. [I am not astonished that you find insurmountable dif-lties where you seem to assume a thing so inconceivable the passage of an accident from one subject to another; I see nothing which compels us to an assumption which is less strange than that of the scholastics of accidents with- a subject, which they have taken care however to attribute y to the miraculous action of the divine omnipotence, ile here this passage would be merely an ordinary one. I e already said something about it above (chap. 21, § 4[1]), ere I also remarked that it is not true that a body loses as ch motion as it gives to another; which they seem to conceive f motion were a substantial thing and resembled salt dissolved water, which comparison is actually the one M. Rohaut,[2] if istake not, has used. I add here that this is not even *the st usual case,* for I have elsewhere demonstrated that the ne quantity of motion is maintained only when the two ies which come into collision proceed in one and the same ection before the collision and still proceed in one and the ne direction after the collision. It is true that the veritable s of motion are derived from a cause superior to matter. for *the power of producing motion by thought,* I do not think have any idea of it, as we have no experience of it. The tesians themselves admit that souls cannot give a new e to matter, but they pretend that they give it a new ermination or direction of the force it has already. For self, I maintain that souls change nothing in the force nor the direction of bodies; that the one would be as incon-able and unreasonable as the other, and that you must il yourself of the pre-established harmony in order to lain the union of the soul and the body.]

h. It is worth our consideration whether active power is the proper attribute of spirits and passive power of ies? Whence we might conjecture that created spirits,

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Cf. ante, p. 176. — Tr.

James Rohaut or Rohault, 1620–1675, a French physicist, a follower of artes. His chief work, the *Physics,* was written in French, and trans-l into Latin, with valuable notes, by Dr. Samuel Clarke, 1675–1729, and English by his brother Dr. John Clarke. It was a text-book in the Uni-ity of Cambridge, until supplanted by the treatises of Sir Isaac Newton. original work first appeared in 1671, and enlarged, in two vols., in 1682. ke's Latin version, 8vo., in 1697; the 4th and best edition, *Jacobi Rohaulti sica,* 8vo., 1718. — Tr.

being active and passive, are not totally separate from simpl passive matter; and that these other beings, which are activ and passive at the same time, partake of both.

Th. [These thoughts greatly please me and entirely expres my conviction, provided you explain the word spirit so gene ally that it comprises all souls, or rather (to speak still mo generally) all the entelechies or substantial unities, which a analogous to spirits.]

§ 31. *Ph.* I much wish that you would show me in th notion we have of spirit anything more confused[1] or nearer contradiction than what the very notion of body includes. mean infinite divisibility.

Th. [What you here say further in order to make evide that we understand the nature of the spirit as well or bett than that of the body is very true; and Fromondus,[2] who ha published a book, *De compositione continui,* was right in ent tling it *Labyrinth.* But the question arises from a false ide you have of the nature of body as well as of space.]

§ 33. *Ph.* *The idea of God* indeed comes to us as othe do, the complex idea of God we have being composed of th simple ideas which we receive from reflection and which w extend by the idea we have of the infinite.

Th. [Upon that question I refer to what I have alrea said in several places in order to make evident that all the ideas, and particularly that of God, are in us originally, a that we only make ourselves take notice of them, and th above all, the idea of the infinite is not formed by an extensi of finite ideas.[3]]

§ 37. *Ph.* The majority of the simple ideas which compo our complex ideas of substances are, properly considered, on *powers,* whatever our inclination to take them as *positive qua ties.*

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[1] Locke's word is "perplexed," *Philos. Works,* Vol. 1, p. 443 (Bohn's ed — TR.

[2] Libert Froidmont or Fromont — Latin, Fromondus — 1587–1653, a Flem theologian, Professor of Philosophy and Theology in the University of L vain. His theological, philological, and scientific knowledge was very ext sive. Descartes esteemed highly both his knowledge and his person. Descartes' letters. His book, *Labyrinthus sive de compositione continui,* peared at Antwerp in 1631. — TR.

[3] *Cf. ante,* pp. 16, 17; *New Essays,* Book II., chap. 14, § 27, Th., and not *ante,* p. 158; chap. 17, § 1, Th., *ante,* p. 162. — TR.

Th. [I think that the *powers,* which are not essential to bstance and which include not only an *aptitude,* but also a rtain *tendency,* are properly what is or ought to be underood by *real qualities.*]

CHAPTER XXIV

OF COLLECTIVE IDEAS OF SUBSTANCES

§ 1. *Ph.* After simple substances we come to the *aggregates.* it not true that the idea of this mass of men composing an my, is as much a single idea as that of one man?

Th. [You are right in saying that this *aggregate* (*ens per gregationem,* to use the language of the school), makes one gle idea, although, properly speaking, this mass of subnces does not form in truth one substance. This is a result which the soul by its perception and its thought gives its t achievement of unity. You may, however, say in a sense t it is something substantial, *i.e.* comprising substances.]

CHAPTER XXV

OF RELATION

1. *Ph.* It remains to consider the ideas of relations which the poorest in reality. When the mind regards one thing comparison with another, this is a relation or respect,[1] and denominations or *relative terms,* which are produced, are so many marks which serve to lead our thoughts beyond subject to something distinct from it, and these two are led *subjects of the relation* (*relata*).

h. [Relations and orders have something of the *essence of son,* although they have their foundation in things; for we say that their reality, like that of eternal truths and possities, comes from the supreme reason.]

5. *Ph.* There may, however, be a change of relation withany change happening in the subject. Titius, whom to-

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[1] Locke's word, *Philos. Works,* Vol. 1, p. 449 (Bohn's ed.). — Tr.

day I consider as a father, ceases to be such to-morrow without any change being made in himself, by the sole fact of his son's death.

Th. [That statement may very well be made in view of things which are perceived; although in metaphysical strictness it is true that there is no entirely exterior denomination (*denominatio pure extrinseca*) because of the real connection of all things.]

§ 6. *Ph.* [I think that relation is only between two things.]

Th. [There are, however, examples of relation between several things at once, as that of order or that of a genealogical tree, which expresses the rank and connection of all the terms or members, and even a figure like that of a polygon includes the relation of all the sides.]

§ 8. *Ph.* It is well to consider also that the ideas of relations are often clearer than those of the things which are the subjects of the relation. Thus the relation of father is clearer than that of man.

Th. [That is because this relation is so general that it may also suit other substances. Moreover, as a subject may have clearness and obscurity, the relation might be grounded in the clear. But if the form itself of the relation involved the knowledge of that which is obscure in the subject, it would participate in this obscurity.]

§ 10. *Ph.* The *terms* which *necessarily* lead the mind to othe ideas than those which are supposed really to exist in th thing to which the term or word is applied are *relative;* th others are *absolute.*

Th. [You have well added this "*necessarily*" and you migh add "*expressly*" or "*at first,*" for you can think of black, fo example, without thinking of its cause; but it is by remainin within the limits of a knowledge which presents itself at firs and which is confused or very distinct, but incomplete; th one when there is no resolution of the idea, the other whe you limit it. Otherwise there is no term so absolute or s loose as not to include relations and the perfect analysis o which does not lead to other things and even to all others; s that you can say that *relative terms* indicate *expressly* the rel tion they contain. I here oppose the *absolute* to the *relati* and it is in another sense that I have opposed it above to th *limited.*]

CHAPTER XXVI

OF CAUSE AND EFFECT AND SOME OTHER RELATIONS

§§ 1, 2. *Ph.* *Cause* is that which produces a simple or in-mplex idea; *effect* is that which is produced.

Th. [I see, sir, that you often understand by *idea* the objec-e reality of the idea or the quality which it represents. You fine only *efficient cause*, as I have already remarked above. u must admit that, in saying that *efficient cause* is that ich produces and *effect* that which is produced, you make only of synonyms. It is true that I have heard you say a le more distinctly, that *cause* is that which *makes* another ng commence to exist, though this word "*makes*" passes er also the principal difficulty entirely. But that will be plained better elsewhere.]

Ph. In order further to touch some other relations, I remark t there are terms employed to designate time which are inarily regarded as signifying only positive ideas, which nevertheless relative, as *young*, *old*, etc., for they involve a ation to the ordinary duration of the substance to which attribute them. Thus a man is called young at the age of nty years, and very young at the age of seven years. But call a horse old at twenty years, and a dog at seven. But do not say that the sun and the stars, a ruby or a diamond, oung or old, because we do not know the ordinary periods heir duration. § 5. The same is true regarding place or nsion, as when a thing is said to be *high* or *low*, *great* or *ll.* Thus a horse which will be large according to the idea Welshman, appears very small to a Fleming; each thinks he horses which are raised in his country.

h. [These remarks are very good. It is true we some-s swerve a little from this sense, as when we say that a g is old when comparing it not with those of its kind, but other kinds. For example, we say that the world or the is very old. Some one asked Galileo if he believed that sun was eternal. He replied: *eterno nò ma ben antico* — al, no, but very ancient.

CHAPTER XXVII

WHAT IDENTITY OR DIVERSITY IS

§ 1. *Ph.* A relative idea of the greatest importance is that of *identity* or *diversity.* We never find and we cannot conceive it possible that two things of the same kind exist in the same time in the same place. Therefore when we ask *whether a thing is the same or not,* the question always relates to a thing which at such a time exists in such a place; whence it follows that a thing cannot have two beginnings of existence, nor two things one beginning only in relation to the time and th place.

Th. [It is always necessary that besides the difference o time and place there be an internal *principle of distinction,* and though there are many things of the same kind, it is never theless true that none of them are ever perfectly alike: thu although time and place (*i.e.* external relation) serve us i distinguishing things which we do not easily distinguish b themselves, the things do not cease to be distinguishable i themselves. The essence (*le precis*) of *identity* and *diversi* consists, then, not in time and place, although it is true th the diversity of things is accompanied by that of time or place, because they bring with them different impressions the thing; not to say that it is rather by the things that on place or one time must be distinguished from another, for themselves they are perfectly alike, but they are not, ther fore, substances or complete realities. The mode of disti guishing which you seem to propose here, as unique in thin of the same kind, is based upon the supposition that penetr tion is not conformable to nature. This supposition is reaso able, but experience indeed makes it evident that it is n closely applied here, when the question concerns distinctio We see, for example, two shadows or rays of light which terpenetrate, and we might invent for ourselves an imagina world wherein bodies would act in the same way. But we not cease to distinguish one ray from another by the ve rate of their passage even when they cross each other.]

§ 3. *Ph.* What is called the *principle of individuation* (*prin-*
ium individuationis) in the schools, where they torment
emselves so much to know what it is, consists in existence
elf which determines each being to a particular time and
ce incommunicable to two beings of the same kind.

Th. The *principle of individuation*[1] reappears in individuals
the principle of distinction of which I just spoke. If two
ividuals were perfectly alike and equal and (in a word)
istinguishable in themselves, there would be no principle
individuation; and I even venture to assert that there
uld be no individual distinction or different individuals
ler this condition. This is why the notion of atoms is
merical, and arises only from the incomplete conceptions
men. For if there were atoms, *i.e.* bodies perfectly hard
perfectly unalterable or incapable of internal change and
able of differing among themselves only in size and shape,
s plain that in the possibility of their being of the same
pe and size they would then be indistinguishable in them-
es, and could be distinguished only by means of external
ominations without an internal basis, which is contrary to
highest principles of reason. But the truth is that every
y is alterable, and indeed actually changes so that it differs
tself from every other. I remember that a distinguished
ıcess,[2] who is of a pre-eminently excellent mind, said one

Leibnitz discussed this principle in his disputation for the degree of
ıelor of Philosophy, entitled, *Disputatio metaphysica de principio indi-*
i, which in his sixteenth year he publicly defended at Leipzig, March 30,
; *cf.* Guhrauer, *Leibniz. Leben*, 1, 27 *sq.* This piece is found in Gerhardt,
–26, where the title-page gives the date of the public defence, May 30,
; Erdmann, 1–5; it has also been edited, with an extended critical intro-
ion, from a copy found in the Library at Hannover by Dr. G. E. Guhrauer,
published at Berlin in 1837. J. H. von Kirchmann has published a German
slation with elaborate and extensive notes in his *Philos. Bibliothek*, Bd.
ie klein. philos. wicht. Schriften G. W. Leibniz; Bd. 82, *Erläuterungen.*
ı recent discussion of the principle of individuality, *cf.* R. Eucken, *The*
lamental Concepts of Mod. Philos. Thought, pp. 231–248. New York,
— Tr.

ophie Charlotte, 1668–1705, the first Queen of Prussia, the friend and in
tain sense the pupil of Leibnitz in philosophy. The *Theodicée* originated
s philosophical conversations with her. *Cf.* Gerhardt, 6, 39; Erdmann,
. Leibnitz's correspondence with her is found in O. Klopp, *Die Werke*
eibniz, Vol. 10, Hannover, 1877; the letters of philosophical importance
rhardt, 3, 343 *sq.*; 6, 488 *sq.*; 7, 544; the letter in G. 6, 499 *sq.* is translated
ıncan, *Philos. Works of Leibnitz*, 149 *sq.* *Cf.* also Kuno Fischer, *Gesch.*
Philos., Vol. 2, p. 261 *sq.*, 3d ed., 1889. — Tr.

day while walking in her garden that she did not believ there were two leaves perfectly alike. A gentleman of dis tinction, who was walking with her, thought he would easil find some. But although he searched long, he was convince by his eyes that he could always note the difference. We se by these considerations, hitherto neglected, how far we hav wandered in philosophy from the most natural notions, an how far we have departed from the great principles of tru metaphysic.]

§ 4. *Ph.* That which constitutes the *unity* (identity) of on and the same plant is the possession of such an organizatio of parts in a single body, as participates in a common li which endures while the plant subsists, although the par change.

Th. [The organization or configuration without an existin principle of life, which I call a monad, would not suffice cause the continuance of *idem numero* or the same individua for the configuration can abide specifically without abidin individually. When a horseshoe is changed into copper in mineral spring of Hungary, the *same* figure in kind remain but not the same as *an individual;* for the iron is dissolve and the copper, with which the water is impregnated, is pr cipitated and insensibly takes its place. Now figure is accident which does not pass from one subject to another (*subjecto in subjectum*). So we must say that bodies as w organized as others do not remain the same in appearan and, speaking strictly, not at all. It is almost like a riv which always changes its water, or like the ship of These which the Athenians were always repairing.[2] But as rega

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[1] Erdmann and Jacques omit "specifiquement, sans demeurer," the read of Gerhardt. — TR.

[2] *Cf.* Plato, *Phædo.* 58 A; Xenophon, *Memorabilia,* 4, 8, 2. The sac ship, sent yearly to Delos by the Athenians in consequence of a vow mad Apollo by Theseus when on his way to Crete with the seven youths and se maidens, the annual tribute of the Athenians to the Minotaur, that if resc he would send annually to Delos a ship with gifts and sacrifices as a tha offering for their deliverance, was repaired piece by piece as necessary that in form and appearance it remained the same old ship in which The himself sailed, while its substance continually changed. The vessel se the philosophers as an instance in discussions concerning identity and w constitutes it, and as an illustration of a numerical substance continuo the same, though constantly changing by the decay and rejection of old the growth and acquisition of new parts, as in the case of the living b — TR.

ostances, which are in themselves a true and real substantial ity, to which may belong actions properly called *vital*, and regards substantial beings, *quæ uno spiritu continentur*, in words of an ancient jurisconsult,[1] *i.e.* which a certain livisible spirit animates, you are right in saying that they nain perfectly *the same individual* through this soul or this rit which constitutes the ego in thinking beings.]

§ 5. *Ph.* The case is not very different in animals and in nts.

Th. [If vegetables and animals have no soul, their identity only apparent; but if they have, individual identity is in th strictly speaking there, although their organized bodies not preserve it.]

6. *Ph.* This also shows wherein the identity of the same n consists, viz. in the fact alone that he enjoys the same , continued by particles of matter which are in a perpetual , but which in this succession are *vitally* united with the ne organized body.

Th. [That may be understood in my sense. In fact, the anized body is not the same from one moment to another; s only equivalent. And if it were not related to the soul, re would no longer be the same life or *vital* union. Thus identity would be only apparent.]

Ph. Whoever shall connect the *identity of man* with anyng else than a well-organized body, in a certain instant, and ch thence continues in this *vital organization* by a succes- of different particles of matter which are united to it, have difficulty in making an embryo, a man of years, a , and a wise man the same man, unless it follows from this position that it is possible for Seth, Ismael, Socrates, Pilate, Augustine[2] to be one and the same man, . . . and this would e still worse with the notions of those philosophers who gnize transmigration and believe that men's souls can be for punishment of their irregularities into the bodies of nals; for I do not believe that any one who was assured the soul of Heliogabalus existed in a hog would mean this hog was a man, and the same man as Heliogabalus.

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[1] extus Pomponius, died 138 A.D. The phrase occurs in the Digest, 41, 3, ol. 2, p. 522, ed. Th. Mommsen, Berlin: Weidmann, 1870.—Tr.

[2] ocke has "St. Austin," *Philos. Works*, Vol. 1, p. 463 (Bohn's ed.).—Tr.

Th. [There is here a question of name and of thing. As fo the thing, the identity of one and the same individual sub stance can be maintained only by the conservation of the sam soul, for the body is in a continual flux, and the soul does no dwell in certain atoms appropriated to itself, nor in a littl incorruptible (*indomptable*) bone, such as the *Luz*[1] of th Rabbis. Moreover there is no transmigration by which th soul wholly leaves its body and passes into another. It keep always, even in death, an organized body, a part of the pre ceding, although what it keeps is always subject to insensibl dissipation and to reparation, and indeed to undergoing in certain time a great change. Thus instead of a transmigra tion of the soul there is a transformation, envelopment, o development, and finally a fluxion of the body of this sou Van Helmont,[2] the son, thought that souls pass from body t body, but always within their kind, so that there will alway be the same number of souls of one and the same kind, an consequently the same number of men and of wolves, and tha the wolves if diminished or extirpated in England would b proportionally increased elsewhere. Certain meditations pu

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[1] The bone which the Jews regarded as incapable of decay, remaining un the last day and forming the nucleus of the resurrection body. Schaarschmi says: "According to the opinion of the Rabbis, says Ulrich in his note to th place, the body which we are to receive at the resurrection is already at ha in our backbone. This body or bone, לוז (*Luz*), as it is properly called, th held for this reason to be incorruptible. In the *Jalkut chadasch*, Fol. 1 title *Maschiach*, n. 44, the following account is given of it: This bone deca not, and the holy giving God will make it soft with the dew, and out of it w build the body. The reason why this little bone is not to be exposed to c ruption, they place in the fact that it has not enjoyed the pleasures of t world, as the rest of the members. This doctrine is with them no em speculation. The old Rabbis of blessed memory have not only seen this bo but have found it actually so strong and hard that their hammer and ro flew in pieces before this little bone was injured in the least. See *Ask* *Rochel* in the 4th part," etc. — TR.

[2] François Mercure van Helmont, 1618–1698, a particular friend of t Countess of Connaway, in whose *Opuscula philosophica*, Bk. I., chap. 6, §§ 8, and chap. 7, § 4, London, 1690, this view of his is found in detail. Leibnitz's relations with Van Helmont, *cf.* Stein, *Leibniz and Spinoza*, 210 *sq.*, and the references in Stein's notes; also *Beilagen*, XV., XVI., *op.* pp. 329–337. Leibnitz composed for him, at the request of his cousin, Baroness of Merode, a Latin epitaph; *cf.* Burckhard, *Historia Biblioth.* *gustæ*, II., p. 326; also Stein. *op. cit.* pp. 336–337. Leibnitz treats of him a his doctrine in his Miscellanies, *cf.* *Otium Hanoveranum*, ed. J. F. Fell pp. 226–230, Lipsiæ, 1718. — TR.

shed in France would also seem to tend in that direction. If
ansmigration is not taken strictly, *i.e.* if any one thought
ıat souls dwelling in the same subtile body change only from
coarser body, it would be possible, even to the passage of
ıe same soul into a body of a different kind after the fashion
the Brahmins and Pythagoreans. But all that is possible
not for that reason conformed to the order of things. But
ıe question whether, in case such a transmigration were true,
ain, Ham, and Ismael, supposing, according to the Rabbis,
ey were the same soul, would deserve to be called the same
an, is only one of name; and I have observed that the cele-
ated author, whose opinions you have maintained, recognizes
d explains it very well (*in the last paragraph of this chapter*).
ıe identity of substance would occur therein, but in case
ere were no connection of memory between the different
rsons, as the same soul would make, there would not be
fficient *moral identity* to say that it would be one and the
me person. And if God willed that the human soul should
into the body of a hog, forgetting the man and performing
rational acts, it would not constitute a man. But if in the
dy of the animal it had the thoughts of a man, and even of
e man whom it animated before the change, like the Golden
ss of Apuleius, one would perhaps have no difficulty in say-
g that the same Lucius, who had come into Thessaly to see
s friends, lived under the ass's hide, where Photis had put
m in spite of herself, and wandered from master to master
til the roses he ate restored him to his natural form.[1]

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[1] *Cf.* Apuleius, *Metamorph.*, Bk. III., Vol. 1, pp. 229 *sq.*; Bk. XI., pp. 770 *sq.*,
tion in 6 vols., paging continuous, A. J. Valpy, London, 1825. The *Meta-*
rphoses is in contents very similar to a work entitled, Λούκιος ἢ ὄνος (*Lucius*
Ass), ascribed to Lucian, a contemporary of Apuleius who flourished about
A.D., and is most probably an imitation of it. The incidents and adven-
es in both are nearly identical, the names only being changed, both writers,
vever, calling the hero Lucius. In the course of his adventures Lucius
ame involved in a love-affair with a waiting-woman by the name of Fotis,
se mistress practised the art of magic, and changed at will herself and
ers into various animals by the use of certain ointments. Lucius, very
irous to learn all about this wonderful art, finally persuaded Fotis, who
med that she understood her mistress's art, to try it on him. She did so,
nding to change him into an owl, into which form her mistress in the
ıt of them both had just changed herself, but in her haste and confusion
ıg the wrong ointment, she changed him, "in spite of herself," into an ass.
work of Apuleius is much more extended than that of Lucian, and, in

§ 9. *Ph.* I think we can boldly advance the idea that whoever of us saw a creature made and formed like himself, although it had never exhibited more reason than a cat or a parrot, would not cease to call it a man; or if he heard a parrot discoursing rationally and in a philosophical manner would call or think it only a parrot, and would say of the former of these animals that it is an uncultivated man, dull and destitute of reason, and of the latter that it is a parrot full of intelligence and good sense.

Th. [I should be more of the same opinion upon the second point than upon the first, although there is still something to be said thereupon. Few theologians would be venturesome enough to agree at once and absolutely to the baptism of an animal in human form, but without appearance of reason, if he were taken while young in the woods and some priest of the Roman church should perhaps say conditionally, *if you are a man I baptize you;* for they would not know whethe he is of the human race and whether a rational soul dwell therein, and this might be an *ourang-outang*, an ape externally very like a man, such as that one whom Tulpius[1] speaks of a having seen, and that one an account of whose anatomy learned physician has published. It is certain (I admit) tha man can become as stupid as an *ourang-outang*, but the interio of a rational soul would abide there in spite of the suspensio of the exercise of reason as I have explained above; thus it i a point of which we cannot judge by appearances. As for th second case, nothing prevents there being rational animals c a different kind from ourselves, as those inhabitants of th poetic kingdom of the birds in the sun, where a parrot havin come from this world after its death, saved the life of a traveller who had treated him well here below. But if it happened, as it happens in the country of the *fairies* or of *Mothe*

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spite of its irony, abounds in a mysticism not found in the Λύκιος ἢ ὄνος. A bri sketch of Lucian's work may be found in the *Encyclopædia Britannic* 9th ed., under the article "Lucius." On Apuleius, and the relation of h work to that of Lucian, *cf.* Teuffel, *Gesch. d. Röm. Lit.*, § 367, 3, 4th ed Leipzig: B. G. Teubner, 1882; § 367, 1, 5th ed. by Ludwig Schwabe, Leipzi Teubner, 1890, and from this ed., the English translation in 2 vols., by Ge C. W. Warr, M.A., Geo. Bell and Sons, London, 1891. — TR.

[1] Nicolas Tulp, 1593–1674, a Dutch physician and magistrate, in Bk. II chap. 56, of his *Observationum medicarum libri tres*, Amsterdam, 1641, 8th ed revised with additions, Leyden, 1752. — TR.

pose, that a parrot was a transformed daughter of a king and came known as such while speaking, doubtless her father d mother would caress her as their daughter whom they ought they possessed though concealed under this strange m. I should not oppose myself, however, to him who should that in the Golden Ass as the *self* or the individual remained for the sake of the same immaterial spirit, so Lucius the person remained for the sake of the apperception of s ego, but that this is no longer a man; as in fact it seems cessary to add something of the figure and constitution of body to the definition of man, when we say that he is a ional animal; otherwise in my view the genii would also be n.]

§ 9. *Ph.* The word *person* carries with it a thinking and elligent being, capable of reason and reflection, that can nsider itself indeed as *the same*, as one and the same thing ich thinks at different times and in different places; which does only by that consciousness[1] which it has of its own s. And this knowledge always accompanies our sensations l our present perceptions [when they are sufficiently distinguished, as I have more than once before remarked] and it by this that each one is to himself what he calls *himself*. is not considered in this case whether the same self is conued in the same or in different substances. For since nsciousness[2] always accompanies thought, and is that which kes each one to be what he calls *himself* and by which he listinguished from every other thinking being; it is also in s alone that personal identity consists, or that which makes rational being always to be the same; and as far as this *sciousness* can be extended over actions or thoughts already st, so far the identity of this person extends, and the *self* it present the same as it was then.

Th. [I am also of this opinion that consciousness or the ception of the ego proves a moral or personal identity. d it is by this that I distinguish the *incessability*[3] of the l of an animal from the *immortality* of the soul of man;

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[1] The French is "sentiment." — TR.

[2] The French text is "la conscience (*consciousness* ou consciencìosité)," hardt; "consciosité," Erdmann and Jacques. — TR.

[3] The French is "incessabilité," *i.e.* continuity or perpetuity. — TR.

both preserve *physical and real identity,* but as for man, he is conformed to the rules of divine providence so that the soul preserves also identity moral and apparent to ourselves, in order to constitute the same person, capable consequently of feeling chastisements and rewards. It seems that you, sir, hold that this apparent identity could be preserved, if there were no real identity. I should think that that might perhaps be by the absolute power of God, but according to the order of things, identity apparent to the person himself who perceives the same, supposes real identity to every *proximate transition* accompanied by reflection or perception of the *ego,* a perception intimate and immediate naturally incapable of deception. I man could be merely a machine and with that have consciousness, it would be necessary to be of your opinion, sir; but hold that this case is not possible at least naturally. Neithe would I say that *personal identity* and even the *self* do no dwell in us and that I am not this *ego* which has been in th cradle, under pretext that I no more remember anything o all that I then did. It is sufficient in order to find mora identity by itself that there be a *middle bond of consciousnes* between a state bordering upon or even a little removed fron another, although a leap or forgotten interval might be mingle therein. Thus if a disease had caused an interruption of th continuity of the bond of consciousness so that I did not kno how I came into the present state, although I remember thing more remote, the testimony of others could fill the void in m memory. I could even be punished upon this testimony, if had just done something bad of deliberate purpose in an interval that I had forgotten a little after on account of thi disease. And if I had just forgotten all past things and would be obliged to let myself be taught anew even to m name and even to reading and writing, I could always lear from others my past life in my previous state, as I have ke my rights without its being necessary for me to share the with two persons, and to make me the heir of myself. A this suffices to maintain moral identity, which makes the san person. It is true that if others should conspire to decei me (as I might indeed be deceived by myself, by some visio dream, or illness, believing that what I had dreamed had ha

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[1] Gerhardt reads: "et"; Erdmann and Jacques: "que," so that. — TR.

ened to me) the appearance would be false.' But there are
ases in which we can be morally certain of the truth upon the
elation of another, and with God whose social connection
rith us constitutes the principal point of morality, the error
annot have place. As for *the self,* it will be well to dis-
inguish it from *the phenomenon of self* and from conscious-
ess. *The self* constitutes identity real and physical, and *the*
henomenon of self, accompanied by truth, joins thereto per-
onal identity. Thus not wishing to say that personal iden-
ity extends no farther than memory, I would say still less
hat *the self* or physical identity depends upon it. Real and
ersonal identity is proved with the utmost possible certainty
y present and immediate reflection; it is proved sufficiently
or ordinary purposes by our memory of the interval or by the
onspiring testimony of others. But if God should change in
n extraordinary manner real identity, personal identity would
emain, provided man preserved the appearances of identity,
s well the internal (that is to say, consciousness) as the
xternal, like those which consist in that which appears to
thers. Thus consciousness is not the sole means for consti-
uting personal identity, and the testimony of another or even
ther proofs can supply it. But there is some difficulty if
ontradiction occurs between those diverse appearances. Con-
iousness may be silent as in forgetfulness; but if it should
ter very clearly things which were contrary to the other
opearances, we should be embarrassed in the decision and as
were suspended sometimes between two possibilities, that
the error of our memory and that of some deception in
cternal appearances.]

§ 11. *Ph.* [You will say] that the members of the body of
ery man are a part of himself [and that thus, the body
ing in a perpetual flux, the man cannot remain the same].

Th. [I should rather prefer to say that *the I* and *the He* are
ithout parts, because it is said, and with reason, that the
me substance, or the same physical *ego,* is really preserved.
ut we cannot say, speaking according to the exact truth of
ings, that the same whole is preserved when a part is lost.
ow whatever has corporeal parts cannot fail to lose some of
em at every moment.]

§ 13. *Ph.* The consciousness which one has of his past actions cannot be transferred from one thinking substance to another [and it would be certain that the same substance abides, because we feel ourselves the same], if this consciousness were a single and indeed an individual act [*i.e.* if the act of reflecting were the same as the act upon which you reflect in perceiving it]. But as it is only an actual representation of a past act it remains to be shown how it is impossible for what has never really been to be represented to the mind as truly having been.

Th. [Memory after an interval may deceive; we have experienced it often, and there are means of conceiving a natural cause of this error. (But present or immediate memory, or the memory of what passed immediately before, *i.e.* the consciousness or reflection which accompanies internal action, cannot naturally deceive; otherwise we should not be certain indeed that we think of this or that thing, for this statement is made internally only of the action already past, and not in connection with the action itself. Now if these internal, immediate experiences are not certain, there will be no truth of fact of which we can be assured.) And I have already said that there may be intelligible reasons for the error which exposes itself in perceptions mediate and external, but in those immediately internal we cannot find any unless by recurring to the omnipotence of God.]

§ 14. *Ph.* As for the question whether the same immaterial substance remaining there may be two distinct persons, see upon what it is based. It is this: *If the same immaterial being can be deprived of all consciousness* (*sentiment*) *of its past existence,* and lose it wholly, without the power of ever recovering it, so that beginning, so to speak, a new account from a new period, it has a consciousness (*conscience*) which cannot extend beyond this new state. All those who believe in the *pre-existence*[1] *of souls* are evidently of this mind. I have seen man who was persuaded that his soul had been the soul of ocrates; and I can assure you that in the post he filled and hich was not one of little importance he passed for a very tional man, and he appeared by his works which have seen ie light to lack neither intelligence nor learning. Now souls eing[1] *indifferent to any portion of matter whatever this may be,* s far as we can know it by their nature, this supposition of the same soul passing into different bodies) involves o apparent absurdity. But he who now has no consciousess of that which Nestor or Socrates ever did or thought, oes he or can he conceive himself the same person as Nestor Socrates? Can he take part in the actions of these two icient Greeks? Can he attribute them to himself or think iem his own actions rather than those of some other man ho has already existed? He is no more the same person ith one of them than if the soul now present in him had en created when it began to animate the body which it now ssesses. This would no more contribute to make him the me person as Nestor, than if some of the particles of matter hich once formed part of Nestor were now a part of this an. For the same immaterial substance without the same nsciousness no more makes the same person to be united to ch or such a body than *the same particles of matter*, united to body without a common consciousness, can make the same rson.

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[1] *I.e.* existence before this earthly life. The doctrine was set forth with more or less fulness by the Pythagoreans, Plato, Philo, Origen, and more recently, among others, by Lessing, *Erziehung des Menschengeschlechtes,* § 94 *sq.*; Kant, *Die Religion innerhalb der Grenzen der blossen Vernunft,* Bk. I., 4; Julius Müller, *Die christ. Lehre von der Sünde,* Bk. IV., chap. 4, Vol. 2, pp. 486 *sq.*, Breslau, 1844, and English translation of the same, 2d ed., from the 5th German ed., Halle, 1866, Vol. 2, pp. 357 *sq.*, Edinburgh: T. & T. Clark, 1868. The doctrine has been used chiefly to explain the origin of

Th. [An immaterial being or a spirit *cannot be stripped* all perception of its past existence. There remain for it me impressions of all that has formerly happened to it, and even has some presentiments of all that will happen to it; t these feelings are most often too small to be capable of ing distinguished and perceived, although they may perhaps metime be developed. This continuation and bond of *per-*

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l or sin; but it is an explanation which does not explain, its assumed solun being merely an evasion of the real difficulty by pushing the problem k unsolved into past time. *Cf.* O. Pfleiderer, *Religionsphilosophie auf ch. Grundlage*, Vol. 2, p. 382, 2d ed., Berlin: G. Reimer, 1884; English nslation, Vol. 4, p. 29, London: Williams & Norgate, 1888. For a critique he theory as held by Julius Müller, *cf.* I. A. Dorner, *System d. christlichen ubenslehre*, § 77, 3; § 82, 2, Berlin: Wm. Hertz, 1881; English translation, inburgh: T. & T. Clark, 1882. — Tr.

[1] Gerhardt and Jacques read: "les âmes estant" ("étant," J.); Erdmann ds: "tant." — Tr.

ceptions constitutes in reality the same individual, but the *apperceptions* (*i.e.* when past feelings are perceived), prove besides a moral identity and make real identity appear. The pre-existence of souls does not appear to us through our perceptions, but if it were true, it might sometime make itself known. Thus it is not reasonable that the restitution of memory becomes forever impossible, the insensible perceptions (whose use I have set forth on so many important occasions) serving here, moreover, to preserve the seeds. The late Henry More, a theologian of the English church, was convinced of the truth of pre-existence and has written in its defence.[1] The late M. Van Helmont, the son, went much farther, as I just said, and believed in the transmigration of souls, but always into bodies of one and the same species, so that according to him the human soul always animated a man. He believed with some Rabbis in the passage of the soul of Adam into the Messiah as into the new Adam. And I do not know but that he thought he had himself been some ancient, altogether clever man that he was elsewhere. Now if this passage of souls was true, at least in the possible way that I have explained above (but which does not appear probable), *i.e* that souls, keeping their subtile bodies, pass at once into other coarse bodies, the same individual would always subsist in Nestor, in Socrates, and in any modern, and he could even make his identity known to any one who would penetrate sufficiently into his nature, on account of the impressions or marks which would there remain of all that Nestor or Socrates have done, and which any genius sufficiently penetrating could there read. But if the modern man had no means internal or external of knowing what he had been, it would be as far as the moral is concerned as if he had not been. But it appears that nothing is neglected in the world in relation even to the moral, because God is the monarch thereof whose government is perfect. Souls according to my hypothesis are not *indifferent* regarding any portion of matter whatever, as it seems to you; on the contrary, they originally express those portions to which they are and ought to be united by nature

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[1] *Cf. Opera*, 1, 750–754, London, 1679; following the Kabbala, he thinks al souls were created at the same time as the world, 2, 539; and, like Leibnitz regards them as always united with some kind of matter, 2, 395, 396.—TR.

hus, if they pass into a new body coarse or sensible, they
ould always preserve the expression[1] of all that they had
erceived in the old, and it would even be necessary for
e new body to manifest it so that the individual continuity
ill always have its real marks. But whatever our past state
ay have been, the effect it leaves cannot always be for us
pperceivable. The clever author of the Essay on Understand-
g, whose views you had espoused, had remarked (Bk. II.,
ap. 27. On Identity, § 27) that a part of these suppositions
fictions of the passage of souls, assumed as possible, is
unded upon the common view of the mind as not only inde-
ndent of matter but also as indifferent to every sort of mat-
r. But I hope that what you have said, sir, on this subject
re and there will serve to clear up this doubt and to make
tter known what is naturally possible. We see thereby
w the acts of an ancient might belong to a modern who had
e same soul, although he did not perceive them. But if he
ould come to recognize it, still more would personal identity
llow. For the rest *a portion of matter* passing from one
dy into another does not constitute the same human indi-
dual, nor what is called the *ego*, but it is the soul which
nstitutes it.]

§ 16. *Ph.* It is, however, true that I am as much concerned
d as justly responsible for an action done a thousand years
ce, which is now adjudged as mine by this present con-
ousness (self-consciousness[2]) thereof, as having been done
myself, as I am for what I have just done in the preced-
moment.

Th. [This view of having done something may deceive in
stant actions. Men have taken as true by force of repetition
at they dreamed, or what they invented; this false view
y embarrass, but it cannot make them punishable, unless
ers agree therewith. On the other hand, you can be respon-
le for what you have done, when you have forgotten it,
vided the action be verified elsewhere.]

§ 17. *Ph.* Every one finds every day that while his little

Gerhardt and Erdmann read: "l'expression"; Jacques: "l'impression."
R.

Gerhardt's reading; Erdmann and Jacques have, as before (p. 245, note 2),
nsciosité ou consciousness." — Tr.

finger is comprehended under this consciousness, it constitutes as much a *part of himself* (of him) as that which is most so.

Th. [I have said (§ 11) why I would not advance the view that my finger is a part of *me;* but it is true that it belongs to me and that it constitutes a part of my body.]

Ph. [Those who hold another view will say that] in the event of this little finger being separated from the rest of the body, if this consciousness accompanies the little finger and leaves the rest of the body, it is evident that the little finger would be the *person*, the *same person*, and that then the *sel* would have nothing to do with the rest of the body.

Th. [Nature does not admit these fictions, which are destroyed by the System of Harmony or the perfect correspondence of the soul and the body.]

§ 18. *Ph.* It seems, however, that if the body should continue to live and to have its particular consciousness, in which the little finger had no share, and that meanwhile the sou was in the finger, the finger could not own any of the actions of the rest of the body, and we could no longer impute them to it.[1]

Th. [The soul also which would be in the finger would no belong to this body. I admit that if God caused consciousnesses to be transferred to other souls, it would be necessary to treat them in accordance with moral notions, as if they were the same; but this would disturb the order of thing without reason, and make a divorce between the apperceptible and the truth, which is conserved by the insensible perceptions, which would not be reasonable, because the perception insensible at present may some day be developed, for there i nothing useless, and eternity gives a large field for changes.]

§ 20. *Ph.* Human laws do not punish the madman for th acts which the sober[2] man does, nor the sober man for wha the madman does, thereby making them two persons. Thu they say: he is beside himself.

Th. [The laws threaten to chastise and promise to recompense in order to prevent bad and further good acts. Now madman may be such that the threats and promises do no operate sufficiently upon him, reason no longer being master ıus in proportion to his weakness the severity of the pain hould cease. On the other hand we wish the criminal to feel ıe effect of the evil he has done in order that he may fear ırther to commit crimes, but the madman not being sensitive ıough, we are well content to wait a good while in order to xecute the sentence which punishes him for what he did hen sober. Thus what the laws or the judges do in these ıstances comes not from the conception of two persons.]

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[1] Locke reads: "him," *Philos. Works*, Vol. 1, p. 475 (Bohn's ed.).—TR.

[2] Locke's word; *Philos. Works*, Vol. 1, p. 475 (Bohn's ed.).—TR.

§ 22. *Ph.* In fact in the party whose opinions I represent › you, this objection is made, that if a man who is drunk and ho is afterwards no longer drunk, is not the same person, he ıould not be punished for what he did while drunk, since he no longer conscious of his act. But they reply that he is together as much the same person as a man who during his eep walks and does many other things and who is responsi- le for all the evil he has happened to do in that state.

Th. [There is much difference between the acts of a runken man and those of a true and recognized somnambu- st. We punish drunkards because they can avoid drunken- ess and can even have some memory of pain while drunk. ut it is not so much within the power of somnambulists to ostain from their nocturnal walk and from what they do. ut if it were true that by giving them a good flogging we could ake them stay in bed, we should be right in doing it, and we ıould not fail either, although this would be rather a remedy ıan a punishment. In fact it is said that this remedy has stored them.]

Ph. Human laws punish both in accord with a justice con- rmed to the mode in which men understand things, because these sorts of cases they cannot certainly distinguish what real from what is counterfeit; thus ignorance is not re- ived as an excuse for what they have done while drunk or leep. The deed is proved against the one who has done it, d you cannot prove in his case lack of consciousness.

Th. [The question is not so much about this, as about what ıst be done when it has been verified, as it may be, that the unkard or somnambulist were beside themselves. In this se the somnambulist would be considered only as a maniac; t as drunkenness is voluntary, and the disease is not, the one punished but not the other.]

Ph. But in the great and terrible day of judgment, whe the secrets of all hearts shall be uncovered, it is right to thin that no one will have to answer for what is wholly unknow to him and that each one will receive what is due him, hi own conscience accusing or excusing[1] him.

Th. I do not know whether it will be necessary for th memory of man to be exalted at the day of judgment in orde for him to remember all he had forgotten, or whether th knowledge of others and above all of the just judge who ca not be deceived will not suffice. We might devise a fiction li tle agreeing with the truth, but nevertheless conceivable, to th effect that a man at the day of judgment believed he ha been bad and that the same appeared true to all other create spirits, who would be able to judge of it, without its havir been true: could we say that the supreme and just judge, wh alone knows the contrary, could condemn this person an judge contrary to his knowledge?[2] Yet it seems that th would follow from the notion you gave of moral personalit You will perhaps say that if God judges contrary to appea ances he will not be sufficiently glorified and will bring pa upon others; but the reply could be made that he is for hi self his unique and supreme law, and that in this case othe should consider themselves mistaken.]

§ 23. *Ph.* Could we suppose either *two* distinct and inco municable *consciousnesses* acting by turns in the same bod the one constantly during the day, the other by night, or th *the same consciousness* acts at intervals in two different bodie I ask if, in the first case, the day and night man, if I m so express myself, would not be two as distinct persons Socrates and Plato, and in the second case would he not be single person in two distinct bodies? It matters not that th same consciousness which affects two different bodies, an these consciousnesses which affect the same body at differe times, belong the one to the same immaterial substance, a the two others to two distinct immaterial substances, whi introduce these different consciousnesses into these bodi

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[1] Erdmann and Jacques omit: "ou excusé." — Tr.

[2] Gerhardt reads: "juger contre ce qu'il sait?" Erdmann and Jacqu "juger contre ce qu'ils font?" *i.e.* "pass a judgment contrary to what th do." — Tr.

ince personal identity would equally be determined by the
onsciousness, whether that consciousness were attached to
ome individual immaterial substance or not. Further, an
mmaterial thinking thing may sometimes lose sight of its
ast consciousness, and recall it anew. Now suppose these
ntervals of memory and forgetfulness return with every day
nd night, then you have two persons with the same immate-
ial spirit. Whence it follows that the *self* is not determined
y the identity or diversity of substance, which it cannot be
ure of, but only by the identity of consciousness.

Th. [I admit that if all the appearances were changed and
ransferred from our spirit to another, or if God made an
xchange between two spirits, giving the visible body and the
ppearances and consciousnesses of the one to the other, per-
nal identity, instead of being attached to that of substance,
ould follow the constant appearances which human morality
ust have in view; but these appearances would not consist
the consciousnesses alone; and it will be necessary for God to
ake the exchange not only of the apperceptions or conscious-
sses of the individuals in question, but also of the appear-
ces which present themselves to others regarding these
rsons, otherwise there would be a contradiction between
e consciousnesses of the one and the testimony of the others,
hich would disturb the moral order of things. But you
ust also agree with me that the divorce between the insensi-
and sensible world, *i.e.* between the insensible perceptions
ich would remain in the same substances, and the appercep-
ns which would be changed, would be a miracle, as when
u suppose that God makes the vacuum; for I have stated
ove why that is not in agreement with the natural order.
re is another supposition much more suitable: it may be
t in another place in the universe or at another time a globe
y be found which does not differ sensibly from this earthly
be, in which we live, and that each of the men who inhabit
loes not differ sensibly from each of us who corresponds to
n. Thus there are at once more than a hundred million pairs
similar persons, *i.e.* of two persons with the same appear-
es and consciousnesses; and God might transfer spirits
ne or with their bodies from one globe to the other without
ir perceiving it; but be they transferred or let alone, what

will you say of their person or *self* according to your authors? Are they two persons or the same? since the consciousness and the internal and external appearance of the men of these globes cannot make the distinction. It is true that God and the spirits capable of seeing the intervals and external relations of times and places, and even internal constitutions, insensible to the men of the two globes, could distinguish them; but according to your hypotheses consciousness alone discerning the persons without being obliged to trouble itself with the real identity or diversity of the substance, or even of that which would appear to others, how is it prevented from saying that these two persons who are at the same time in these two similar globes, but separated from each other by an inexpressible distance, are only one and the same person; which is, however, a manifest absurdity. For the rest, speaking of what may be in the course of nature, the two similar globes and the two similar souls of the two globes would remain so only for a time. For since there is an individual diversity, this difference must consist at least in the insensible constitutions which must be developed in the course of time.]

§ 26. *Ph.* Suppose a man punished now for what he has done in another life and of which he could cause himself to have absolutely no consciousness; what difference is there between such treatment and that which would be done him in creating him miserable?

Th. [The Platonists, disciples of Origen, some Hebrew and other defenders of the pre-existence of souls believed tha the souls of this world were placed in imperfect bodies, i order to suffer for the crimes committed in a preceding world But it is true, if they neither know nor have ever learned th truth, neither by recall of memory, nor by any traces, nor b the knowledge of another, you cannot call it punishment according to ordinary notions. There is, however, some room for doubt, while speaking of punishments in general, whethe it is absolutely necessary that those who suffer should one da learn the reason for their suffering, and whether it would no very often suffice that better informed minds should fin therein a motive for glorifying the divine justice. Howeve it is more likely, at least in general, that the sufferers wi know the reason of their suffering.]

§ 29. *Ph.* [Perhaps in the main you can agree with my uthor who concludes his chapter on identity by saying: that he question whether the same man abides, is a question of ame, according as you understand by man either the rational pirit alone or the body alone of this form which is called uman, or finally the spirit united to such a body. In the first ase the spirit separated (at least from the coarse body) will e still the man; in the second an ourang-outang, perfectly milar to us, reason excepted, would be a man; and if man ere deprived of his rational soul and received a soul of an nimal, he would continue the same man. In the third case oth must remain together with the union itself; the same pirit, and the same body in part, or at least equivalent, as r as the sensible corporeal form is concerned. Thus you ould continue the same being physically or morally, *i.e.* the ame person without remaining man, in case you consider this gure an essential to man according to this last sense.]

Th. [I admit that in this respect it is a question of name, nd in the third sense the same animal is as it were now terpillar or silk-worm and now butterfly, and some as it ere have imagined that the angels of this world were men in past world. But we have devoted ourselves in this confer- nce to discussions more important than those about the eaning of words. I have shown you the source of true hysical identity; I have made it appear that morality con- adicts it no more than memory; that they cannot always ssign physical identity to the person indeed, whose (iden- ty) is at stake, nor to those who are in connection with him; ut that nevertheless they never contradict physical identity nd never are completely[1] divorced from it; that there are ways some created spirits who know or may know what it ; but that there is room to consider that what is indifferent garding the persons themselves can be so only for a time.]

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[1] Erdmann and Jacques omit: "entier."—Tr.

CHAPTER XXVIII

OF SOME OTHER RELATIONS, AND ESPECIALLY OF MORAL RELATIONS

§ 1. *Ph.* Besides the relations founded upon time, space, and causality, of which we have just been speaking, there are an infinite number of others, some of which I am going to propose for discussion. Every simple idea capable of parts and of degrees, furnishes an occasion for comparing the subjects in which it is found, for example, the idea of more (or less or equally) white. This relation may be called *proportional.*

Th. [There may be, however, excess without proportion; and this is in reference to a *magnitude* which I call *imperfect*, as when we say that the angle which the ray makes with the arc of its circle is less than a right angle, for it is impossible that there be a proportion between these two angles, or between one of them and their difference, which is the angle of contingence.]

§ 2. *Ph.* Another occasion of comparing is furnished by the circumstances of origin which found the relations of father and child, brothers, cousins, countrymen. With us people seldom think of saying this bull is grandfather of such a calf, or these two pigeons are cousins-german; for languages are proportioned to use. But there are countries in which men less curious about their own pedigree than about that of their horses have not only names for each particular horse, but also for their different degrees of relation.

Th. [We can furthermore join the family idea and names to those of relationship. It is true we do not observe under the empire of Charlemagne and for a sufficiently long time before and after family names in Germany, France, and Lombardy. It is moreover not long that there have been families (even noble) in the North who had no name, and in which a man would be recognized in his natal place only by calling his name and that of his father, and besides (in case he transplanted himself) by joining to his own the name of the place ence he came. The Arabs and the Turcomans have also the ne custom (I believe), having but few particular family mes, and content themselves with naming the father and ndfather, etc., of any one, and they pay the same honor to ir valuable horses, which they call by a proper name and name of the father and even beyond. Thus they spoke of horses which the Monarch[1] of the Turks sent to the peror after the peace of Carlowitz;[2] and the late count Oldenburg, the last of his branch, whose studs were nous, and who lived a very long time, had genealogical es of his horses so that he could prove their *nobility*, l went so far as to have portraits of their ancestors (*imag- s majorum*) which were so much in demand among the mans. But to return to men, there are among the Arabs l the Tartars names of *tribes*, which are like great families, ich are much enlarged in the course of time. And these nes are taken either from the progenitor as in the time of ses, or from the place of abode, or from some other circum- nce. Mr. Worsley, an observing[3] traveller, who is informed the present state of Arabia Deserta, where he has been for ne time, affirms that in all the countries between Egypt and lestine, and where Moses passed, there are to-day only three bes, who can bring together five thousand men, and that of these tribes is called *Sali* from the progenitor (as I ieve) whose tomb posterity honors as that of a saint, casting on it dust which the Arabs put upon the heads of themselves l their camels. For the rest *consanguinity* exists when there a common origin of those whose relation is considered; but could say there is *alliance* or affinity between two persons, en they may have consanguinity with one and the same son without there being any for that reason between them- ves, which happens through the intervention of marriages. t as it is not customary to say that there is affinity between sband and wife, although their marriage may cause affinity relation to other persons, it would perhaps be better to that there is *affinity* between those who would have con-

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[1] Erdmann and Jacques read: "grand Seigneur." — Tr.

[2] Jan. 26, 1699. — Tr.

[3] Erdmann and Jacques read: "curieux"; Gerhardt reads: "observatif." R.

sanguinity between themselves if husband and wife wer
taken as one and the same person.

§ 3. *Ph.* The foundation of a *relation* is sometimes a mor
right, as the relation of a general of an army or of a citize
These *relations* depending upon the agreements men hav
made between themselves are *voluntary* or by *institution,* an
may be distinguished from the *natural.* Sometimes the tw
correlatives have each its name, as patron and client, gener
and soldier. But it is not so always; as, for example, it is n
so in the case of those who are related to the chancellor.

Th. [There are sometimes *natural relations* which men hav
invested and enriched with certain *moral* relations, as, f
example, children have the right to claim the legitimate po
tion of the estate of their fathers or mothers; young perso
are under certain restraints and the aged have certain imm
nities. But it also happens that some relations are taken
natural which are not so; as when the laws say that t
father is he who married the mother within the time whi
makes it possible for the child to be attributed to him; a
this substitution of the *instituted* in the place of the *natural*
sometimes only *presumption,* that is to say, a judgment whi
causes that to pass as true which perhaps is not so, whilst
falsity is not at all proved. Thus it is that the maxim: *pat*
est quem nuptiæ demonstrant is understood in Roman law a
among the most of the peoples where it is received. But the
tell me that in England it avails nothing in proving his *alib*
provided he has been in one of the three kingdoms, so th
the presumption in that case changes into *fiction* or into wh
some doctors call *præsumtio juris et de jure.*]

§ 4. *Ph. A moral relation* is the conformity or disagreeme
which is found between the voluntary acts of men and a ru
which makes us judge whether they are *morally good* or ba
§ 5. And *moral good* or *moral evil* is the conformity or t
opposition which is found between voluntary acts and a ce
tain law which brings upon us good or evil (physical) by t
will and power of the lawgiver (or of him who wills to mai
tain the law) and it is this we call *reward* and *punishment.*

Th. [Authors, as clever as he whose views you, sir, rep
sent, are allowed to adapt their terms as they think prope
But it is also true that according to this notion one and t

ame act would be morally good and morally bad at the same ime under different legislators, entirely as our clever author nderstood *virtue* above as that which is praised, and consequently the same act would be virtuous or not according to ne opinions of men. Now that not being the ordinary sense nat is given to morally good and virtuous acts, I prefer for ıyself, to take as the measure of moral good and of virtue ne invariable rule of reason which God is charged with mainıining. We can also be assured that by his mediation all ıoral good becomes physical,[1] or as the ancients say, every ning virtuous is useful[2]; while in order to express the notion f the author, it would be necessary to say that moral good or vil is an imposed or *instituted good* or *evil*, which he who has ne power tries to make us follow or shun by punishments nd rewards. The good is that which by the general institu-on of God is conformed to nature or to reason.]

§ 7. *Ph.* There are three sorts of *laws:* the *divine law*, the *vil law*, and the law of opinion or *reputation.* The first is ne rule of *sins* or *duties*, the second of *actions criminal* or *nocent*, the third of *virtues* or *vices.*

Th. [According to the ordinary sense of terms *virtues* and *ices* differ from *duties* and *sins* only as *habits* differ from

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[1] What does Leibnitz here mean by "physical"? Possibly "physical" is ere equivalent to "real," *i.e.* actual, concrete, objectively realized as distinıished from that which is purely subjective and abstract, and exists in idea ıly (*cf.* Bk. II., chap. 27, § 9, Th. *prope fin.*, *ante*, p. 247, line 7, where the two rms are united in one phrase "real and physical," and seem to be mutually terpretative and emphatic). Or, possibly, "physical" is here used in the nse of "natural," the meaning of the passage being that moral good is alized by the mediation of God through the natural forces and in accord th the natural laws of the universe, which with Leibnitz have their ultimate urce and ground in the nature of God and his choice of "the best and most rfect," as the universal principle of creation. The true view of the world according to Leibnitz, both physico-mechanical and moral-teleological, the o finding a higher unity in this principle of "the best and most perfect," moral-teleological prevailing in case of collision, because of this princie and because the physical is in its last analysis and ground spiritual and ssessed of an inner teleological character which is realized by means of chanism while resting upon the principle of the divine choice of the best. . *Discours de Metaphysique*, § 19 *sq.*, Gerhardt, 4, 444 *sq.;* letter to Bayle, 3, 54; Erdmann, 106. — TR.

[2] *Cf.* Cicero, *De Officiis*, Bk. III., chaps. 3 and 7, who shows on the author- of Panætius and others that the virtuous and the useful — *honestum* and *le* — are identical, a chief point of the Stoic philosophy. *Cf.* also Zeller, *e Philos. d. Griech.*, III., 1 [Vol. 5], p. 212, 3d ed. 1880. — TR.

actions, and virtue and vice are not understood as something dependent upon opinion.[1] A great sin is called a *crime*, and the *innocent* is not opposed to the *criminal* but to the *blameworthy.* The divine law [2] is of two sorts, natural and positive. Civil law is positive. The law of reputation deserves the name of law only improperly, or is comprised under the natural law, as though I said, the law of health, the law of the family, when actions naturally attract some good or evil, as the approbation of another, health, gain.]

§ 10. *Ph.* The claim is in fact everywhere made that the terms virtue and vice signify actions good and bad in their nature, and so far as they are really applied in this sense, virtue agrees perfectly with the divine (natural) law. But whatever the claims of men, it is evident[3] that these names, considered in their particular applications, are constantly and solely attributed to such or such actions as in each country or in each society are reputed honorable or shameful: otherwise men *would condemn themselves.* Thus the measure of what is called virtue and vice is this approbation or this contempt, this esteem or this blame, which is formed by a secret or tacit consent. For although men united in political societies have resigned into the hands of the public the disposition of all their forces, so that they cannot employ them against their fellow-citizens beyond what the law permits, they nevertheless always retain the power of thinking well or ill, of approval or disapproval.

Th. [If the clever author, who thus explains himself, should declare with you, sir, that it has pleased him to assign this present arbitrary nominal definition to the terms virtue and vice, we could only say that it is allowed him in theory for the

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[1] Leibnitz maintains, as against Locke's theory of relativity, the absolute and objective character of Moral Law. It is objective and universal, not subjective and particular; not dependent upon the opinions of men, but grounded in "the general institution of God," and ultimately in his infinitely perfec moral nature, and is thus valid for and binding upon all moral beings as such This is Moral Law absolute and ideal which changes not; it is progressively and approximately attained or realized in the history of the individual and the race according to men's apprehension of its nature and requirements and their strength of purpose and effort in its pursuit. — Tr.

[2] *Cf.* the discussion of Moral Law, in *Principles and Practice of Morality* pp. 79 *sq.*, by E. G. Robinson, D.D., LL.D., Ex-President of Brown University Boston: Silver, Burdett & Co., 1888. — Tr.

[3] Locke has: "visible," *Philos. Works,* Vol. 1, p. 488 (Bohn's ed.). — Tr.

ivenience of expression for want perhaps of other terms; but
shall be obliged to add that this meaning is not conformed
usage, nor indeed useful for edification, and that it would
ind ill in the ears of many people, if any one should intro-
ce it into practical life and conversation, as this author
ms himself to admit in his preface. But it is (for us) to
on farther here, and although you admit that men claim to
ak of that which is naturally virtuous or vicious according
immutable laws, you maintain that in fact they mean to
ak only of that which depends on opinion. But it seems
me that by the same reasoning you could further maintain
t truth and reason and all that could be named as most real,
ends upon opinion, because men are mistaken when they
ge of it. Is it not better then on all accounts to say, that
n understand by virtue as by truth, that which is conformed
nature, but that they are mistaken often in its application;
ides *they are mistaken less than they think*, for what they
ise ordinarily deserves it in certain respects. The virtue
drinking, *i.e.* of well carrying wine, is an advantage, which
ved Bonosus, in conciliating the Barbarians and in drawing
n them their secrets.[1] The nocturnal powers of Hercules, in
ich the same Bonosus claimed to resemble him, were no less
erfection. The craft of thieves was praised among the
rtans, and it is not the skill, but the unseasonable use
ich has been made of it, which is blamable, and those whom
harass in (time of) complete peace may serve sometimes as
ellent partisans in time of war. Thus all depends upon the
lication and the good or bad use of the advantages you pos-
. It is also very often true and should not be taken as a
y strange thing, that men *condemn themselves*, as when they
vhat they blame in others, and there is often a contradiction
veen actions and words which scandalizes the public, when
t a magistrate or preacher does and defends leaps to the
s of the whole world.]

11.[2] *Ph.* Everywhere that which passes as virtue is that
ch is thought worthy of praise. Virtue and praise are often
gnated by the same name. *Sunt hic etiam sua præmia
li*, says Vergil (*Aen.* I. 461) and Cicero, *Nihil habet natura*

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[1] Cf. Vopiscus, *Script. hist. August.*, Vol. 2, pp. 213, 214, ed. Peter.—Tr.

[2] Gerhardt and Locke; Erdmann and Jacques have § 12.—Tr.

praestantius quam honestatem, quam laudem, quam dignitate quam decus.[1] (*Quæst. Tuscul.* Bk. 2. chap. 20) and he ad a little after: *Hisce ego pluribus nominibus unam rem declara volo.*[1]

Th. [It is true that the ancients have designated *virtue* the name *honesty* (*l'honneste*), as when they have praised *coctum generoso pectus honesto.*[2] It is true also that honest (*l'honneste*) has its name of honor or of praise. But th means not that virtue is that which is praised but that it that which is worthy of praise and which depends upon trut and not upon opinion.]

Ph. Many do not think at all seriously of the *law of God,* hope that they will one day be reconciled with its author, a as regards the *law of the state* they flatter themselves with i punity. But they do not think that he who does anythi contrary to the opinions of those with whom he associates, a to whom he wishes to commend himself, can avoid the pain their censure and of their disdain. No one who retains a consciousness of his own nature can live in society constant despised; this is the force of the *law of reputation.*

Th. [I have already said that it is not so much the pain o law, as a natural pain which the act draws upon itself. It however, true that many people are but little concerned abo it, because ordinarily, if they are despised by some on accou of some blameworthy act, they find accomplices or at lea partisans, who do not despise them, if they are ever so litt commendable in some other respect. They forget even a the most infamous, and it often suffices to be bold and i pudent like that Phormio of Terence in order that all may overlooked. If *excommunication* produced a truly consta and general contempt, it would have the force of this law which our author speaks: and it had in fact this force with t first Christians and for them took the place of the right, whi they lacked, to punish the guilty; nearly as artisans mainta certain customs among themselves in spite of the laws, throu

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[1] The quotation is not exact. *Cf. op. cit.*, ed. Klotz, Lipsiæ, B. G. Te ner, 1870, where the text reads thus: "Nihil enim habet præstantius, n quod magis expetat quam honestatem, quam laudem, quam dignitatem, qu decus. Hisce ego pluribus nominibus unam rem declarari volo, sed utor quam maxime significem, pluribus." — Tr.

[2] Persius. *Sat.* 2, 74. —Tr.

e contempt which they show for those who do not observe
em. And it is this which has also maintained duels con-
ary to the ordinances. It would be desirable for the public
agree with itself and with reason in its praise and blame;
d that the great above all do not encourage the bad by laugh-
g at their bad actions, in which it oftenest seems that not he
ao has done them, but he who has suffered them is punished
contempt and ridiculed. We shall see also generally that
en despise not so much vice as weakness and misfortune.
ıus the law of reputation would need to be greatly reformed,
d also to be better observed.]

§ 19. *Ph.* Before leaving the consideration of relations, I
ould remark that we usually have a notion as clear or clearer
the *relation* than of its *ground.* If I believed that Sempronia
ok Titus from beneath a cabbage, as they used to tell little
ildren, and that afterwards she had had Caius in the same
anner, I should have as clear a notion of the relation of
other between Titus and Caius, as if I had all the knowledge
the midwives.

Th. But when they once said to a child, that his little
other, who had just been born, had been drawn from a well
reply which they make use of in Germany to satisfy the
riosity of children upon this subject) the child replied that
wondered that they did not throw him back again into the
me well when he cried so much and disturbed his mother.
ıe fact is this explanation did not make him know any rea-
n for the love his mother showed for the child. We can say
en that those who do not know the ground of relations have
ly concerning them what I call thoughts, surd in part and
sufficient, although these thoughts may suffice in certain
spects and upon certain occasions.]

CHAPTER XXIX

OF CLEAR AND OBSCURE, DISTINCT AND CONFUSED IDEAS

§ 2. *Ph.* We come now to some differences of ideas. *Our
nple ideas* are *clear* when they are such as the objects them-
.ves, from whence they are received, represent or may

represent them with all the circumstances requisite to a wel ordered sensation or perception. While the memory retai them in this way, they are in this case clear ideas, and so f as they lack this original exactness or have lost anything to speak of their first freshness, and are, as it were, tarnishe or faded by time, so far are they obscure. *Complex ideas* a *clear*, when the simple ideas which compose them are clear a the number and order of these simple ideas are fixed.

Th. [In a brief discourse on ideas,[1] true or false, clear obscure, distinct or confused, inserted in the "Leipsic Acts of the year 1684, I have given a definition of *clear idea* common to the simple and complex and which gives the re son of what you say here. I said then that an *idea* is cle when it suffices to recognize and distinguish the thing: when I have a very clear idea of a color, I shall not ta another instead of that which I ask for, and if I have a cle idea of a plant, I shall distinguish it among other neighbori ones; without this *the idea* is *obscure*. I believe that we ha but few perfectly clear ideas of sensible things. There a colors which approach each other in such a way that we ca not distinguish them by memory, and yet we will sometim distinguish them by placing one near the other. And wh we think we have fully described a plant, we can bring o from the Indies which will have all we have put into o description and which will not cease making itself known a different species: thus we can never perfectly determi *species infamæ*, or the lowest species.]

§ 4. *Ph.* As a *clear idea* is that whereof the mind has su a full and evident perception as it receives from an extern object operating duly upon a well-disposed organ; so a *disti* idea is that wherein the mind perceives a difference, whi distinguishes it from every other idea; and a confused idea that which cannot be sufficiently distinguished from anoth from which it should be different.

Th. [According to this notion which you give of the d- *tinct* idea, I do not see how you distinguish it from the *cle* idea. This is why I have been wont to follow here the la- guage of Descartes, with whom an idea may be clear and cised at the same time; and such are the ideas of sensible ualities, appropriate to the organs, such as color or heat. They re clear, for they are easily recognized and distinguished the ne from the other, but they are not distinct, because they are ot distinguished by what they include. Thus we cannot give definition of them. We make them known only by examples, nd for the rest we must say it is an indefinite somewhat, ntil we can decipher its contexture. Thus although in ır view distinct ideas distinguish one object from another; evertheless, as the ideas clear, but confused in themselves, do also, we call *distinct* not all those which are very discrimiating or which distinguish objects, but those which are well stinguished, *i.e.* which are distinct in themselves and disnguish in the object the marks which make it known, which analysis or definition of it gives; otherwise we call them *nfused.* And in this sense the confusion which reigns in eas can be exempt from blame, being an imperfection of our ture; for we cannot discern the causes, for example, of odors d tastes, nor the content of these qualities. This confusion n, however, be blameworthy, when it is important and ithin my power to have distinct ideas, as, for example, if I ok adulterated gold as the true, for want of making the cessary assays which contain the marks of good gold.

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[1] *Meditationes de Cognitione, Veritate et Ideis.* *Cf. ante*, p. 14, note; p. 227, note 3.—Tr.

§ 5. *Ph.* But you will say that there is no idea confused (or ther according to your view, obscure) in itself[1] for it can be ly such as it is perceived by the mind, and that distinishes it sufficiently from all others. § 6. And in order to move this difficulty it is needful to know that the defect of eas is related to names, and what renders it faulty is the t that it can as well be designated by another name as the e which we use to express it.

Th. [It seems to me that we ought not to make this depend on names. Alexander the Great had seen (they say) in a am a plant able to cure Lysimachus, which has since n called *Lysimachia,* because it effectually cured this friend the king. When Alexander had a quantity of plants ught, among which he recognized that which he had seen his dream, if unfortunately he had not had a sufficient idea it to recognize it and had needed as Nebuchadnezzar a

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[1] Erdmann and Jacques omit: "en elle même." — TR.

Daniel to enable him to recall his dream, it is plain that th idea he would have had of it would have been *obscure* an imperfect (for it is thus I should prefer to call it rather tha *confused*), not for want of appositeness in a certain name, fo there was none, but for want of application to the thing, *i.* to the plant which was to heal. In this case Alexander woul be reminded of certain circumstances, but he would have bee in doubt about others; and the name serving us to designat anything makes us, when we fail in the application to name fail ordinarily in regard to the thing which is promised b this name.]

§ 7. *Ph.* As complex ideas are the most subject to thi imperfection, it may arise from the fact that the idea composed of too small a number of simple ideas, as is, fo example, the idea of an animal which has the skin spotted, (term) which is too general, and which does not suffice to di tinguish the lynx, the leopard, or the panther, which a besides distinguished by particular names.

Th. [If we were in the condition Adam was in before h had given names to the animals, this defect would not ceas to have place. For supposing we knew that among th spotted animals there is one which has extraordinarily pen trating sight, but that we did not know whether it is a tig or a lynx, or some other species; it is an imperfection n to be able to distinguish it. Thus the question is not much about the name as about that which may give occ sion for it, and which renders the animal worthy of a partic lar name. It thereby appears also that the idea of a spott animal is good in itself, and without confusion and obscurit when it is to serve only the genus; but when joined wi some other idea which is not sufficiently remembered it to designate the species, the complex idea is obscure a imperfect.]

§ 8. *Ph.* There is an opposite defect when the simple ide which make up the complex idea are sufficient in number, b too confused and involved, like some pictures, which appe so confused that they must be only the representation of t sky covered with clouds, in which case also we could not s that there is confusion any more than if it were another p ture made to imitate that one; but when we say that th ture should make us see a portrait, we shall have reason say that it is confused because we cannot say whether s that of a man, or of a monkey, or of a fish, but it may be t when we look at it in a cylindrical mirror, the confusion l disappear, and that we shall see that it is a Julius Cæsar. us some *mental paintings* (if I may so express myself) can- be called confused from any way in which the parts are ned together; for whatever these paintings are, they can iously be distinguished from every other, until they are ked under some ordinary name, to which we cannot see t they belong any more than to some other name of a ferent signification.

Th. [This picture whose parts we see distinctly, without icing the result to which they in a certain way point, embles the idea of a heap of stones, which is truly confused only in your sense, but also in mine, so far as we have *tinctly* conceived their number and other properties. If re were thirty-six of them (for example), we would not ow, looking at them heaped together without arrangement, t they may produce a triangle or indeed a square, as in t they can, because thirty-six is a square as well as a tri- gular number. Thus it is that, in looking at a figure of a usand sides, we shall have only a confused idea of it, until know the number of the sides which is the cube of ten. e question, then, is not of names but of the *distinct proper-* which are to be found in the idea when we have cleared its confusion. And it is sometimes difficult to find the , or the manner of looking at it from a certain point, either the intervention of a certain mirror or glass in order to see purpose of him who has caused the thing.]

9. *Ph.* It cannot be denied that there is yet a third defect deas, which depends in truth upon the bad use of names; s when our ideas are uncertain or undetermined. Thus may see every day men who, making no difficulty of iling themselves of the ordinary words of their mother gue, before they have learned their precise meaning, change idea which they attach to them almost as often as they them in their discourse. § 10. Thus we see how much es contribute to this denomination of ideas distinct and fused, and, without the consideration of distinct names

understood as signs of distinct things, it will be very difficult to say what a *confused idea* is.

Th. [I have, however, just explained it without considering the names, whether in the case where *the confusion* is understood with you as what I call *obscurity*, or in that where it is understood in my sense as the defect in the analysis of the notion we have. And I have also shown that every obscure idea is in fact indeterminate or uncertain, as in the example of the spotted animal we have seen, where we know that something further must be added to this general notion, without clearly remembering it; so that the first and third defect which you have specified come to the same thing. It is, however, very true that the abuse of words is a great source of errors, for a kind of error in calculating occurs therefrom, as if in calculating we did not notice carefully the place of the counter, or if we wrote the figures so badly that we could not distinguish a 2 from a 7, or if we omitted or changed them through inadvertence. This abuse of words consists either in not connecting ideas with the whole or in connecting them with an imperfect one, of which a part is empty and abides so to speak in blank; and in these two cases there is a certain void and *surd* in the thought which is filled only by the name. Or, finally, the defect is in attaching to the word different ideas, whether we are uncertain which should be chosen, which makes the idea obscure as well as when a part of it is surd; or whether we select them by turns, and avail ourselves sometimes of one, sometimes of the other a the sense of the same word in one and the same course o reasoning in a way capable of causing error, without considering that the ideas do not agree. Thus the uncertain though is either void and without idea, or fluctuates between severa ideas. This does harm whether[1] we wish to designate som definite thing or whether we wish to give a word a certai sense corresponding either to that of which we have alread availed ourselves, or to that which others have used, abov all in ordinary language, common to all, or to the artisan And from this arise an infinite number of vague and vain di putes in conversation, in lecture-rooms, and in books, which w ıay sometimes avoid by *distinctions*, but which most frequently serve only to confuse the more, by putting in the lace of a vague and obscure term other terms still more ague and obscure, as those often are which the philosophers nploy in their distinctions, without having good definitions f them.]

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[1] Erdmann and Jacques omit: "soit qu'on veuille designer quelque cho determinée," the reading of Gerhardt. — TR.

§ 12. *Ph.* If there is any other confusion in ideas, than this hich has a secret relation to names, this at least casts more isorder than any other into the thoughts and discourse of en.

Th. [I agree, but most frequently some notion of the thing ıd the purpose which we have in availing ourselves of ıe name is mixed with it; as, for example, when we speak *the church*, many have in view a government, while others ink of the truth of the doctrine.]

Ph. The way to prevent this confusion is constantly to pply the same name to a certain mass of simple ideas united a fixed number and into a determined order. But as that its neither the laziness nor the vanity of men, and as it can used only in the discovery and the defence of the truth, ıich is not always the end they propose to themselves, such ecision is one of the things that is rather to be wished than ped for. The vague application of names to ideas inde-minate, variable, and almost wholly empty (in the surd oughts) is on one side a covering of our ignorance and the other a confusing and embarrassing of others, which sses as true learning and as a mark of superiority in point knowledge.

Th. [The affectation of elegance and wit has further con-outed much to this intricacy of language; for in order to ress thoughts beautifully and agreeably we make no diffi-ty of giving words in a *tropical* manner a sense different m the ordinary, sometimes more general or more limited, ich is called *synecdoche*, sometimes transferred according to relations of things whose names we change, either by currence in *metonymy*, or by comparison in *metaphor*, not speak of *irony*, which makes use of a term in a sense ectly opposite to its real meaning. Thus these changes are ıed when recognized; but they are recognized only rarely. l in this indeterminateness of language, in which there is lacking a kind of law which regulates the meaning of words, as there is something in the title of the digests of the Roman Law, *De Verborum Significationibus*, persons the most judicious, when they write for ordinary readers, would be deprive of that which gives charm and force to their expression i they should confine themselves rigorously to the fixed meanings of terms. They need only take care that their variatio does not cause any error or false reasoning to spring up. Th distinction of the ancients between the *exoteric*,[1] *i.e.* popular and the *acroamatic*[1] mode of writing, which belongs to thos who are occupied in the discovery of truth, has place here And if any one wished to write in mathematical fashion i metaphysics or ethics, nothing would prevent him from s doing with rigor. Some have professed to do this, and w have a promise of mathematical demonstrations outside o mathematics; but it is very rare that they have been successful. This is, I believe, because they are disgusted with th trouble it is necessary to take for a small number of reader where they could ask as in Persius: *Quis leget haec*, an reply: *Vel duo vel nemo.*[2] I believe, however, that if the would undertake it in the proper way they would not b likely to repent it. And I have been tempted to try it.]

§ 13. *Ph.* You will agree with me, however, that comple ideas may be very clear and distinct in one aspect, and ver obscure and confused in another.

Th. [There is no reason to doubt it; for example, we hav very distinct ideas of a good part of the solid visible par of the human body, but we have but few of the liquids whic enter therein.]

Ph. If a man speaks of a figure of a thousand sides, th lea of this figure may be very obscure in his mind, although hat of the number may be very distinct therein.

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[1] *Cf.* Leibnitz, *De Stilo philos. Nizolii*, Gerhardt, Vol. 4, p. 146; Erdma p. 63. "Acroamatic" (*ante*, p. 42), from ἀκρόαμα, anything heard, the ve ἀκροᾶσθαι, the regular word for hearing or attending lectures, the adjecti ἀκροαματικός, designed for hearing only, and, when used of the doctrines philosophers, meaning the *esoteric*, *i.e.* the doctrines in their most rigor and exact scientific form, their custom being to give these orally to th pupils, while treating them in a more popular, *exoteric* manner in their wr- ings. Such was the method of Plato and of Aristotle, one of whose works called φυσικὴ ἀκρόασις. Schaarschmidt refers to Bernays, *Die Dialoge d. Ar- totles*, p. 30 *sq.* Berlin, 1863, and Madvig, Excursus VII. to his edition Cicero's *De Finibus.* — Tr.

[2] *Sat.* 1, lines 2, 3. — Tr.

Th. [This example is not in point here; a regular polygon f a thousand sides is known as distinctly as the millenary umber, because we may discover and demonstrate all kinds f truth.]

Ph. But we do not have a precise idea of a figure of thousand sides, so that we can distinguish it from another, hich has only nine hundred ninety-nine.

Th. [This example shows that you here confound the idea ith the image. If any one places before me a regular poly- on, sight and imagination cannot make me comprehend the illenary therein; I have only a *confused* idea both of the gure and of its number, until I *distinguish* the number by unting. But having found it, I know very well the nature d the properties of the proposed polygon, as far as they e those of the chiliagon, and consequently I have this idea it; but I cannot have the image of a chiliagon, and it would necessary to have senses and imagination more exquisite d better exercised in order to distinguish it thereby from polygon which had one side less. But the knowledge of gures no more than that of numbers depends upon the imag- ation, although it is of service therein; and a mathematician n know exactly the nature of a nonagon and a decagon, cause he has the means of making and examining them, ough he could not discern them at sight. It is true that a orkman or an engineer, who does not perhaps know their ture sufficiently, can have this advantage beyond a great ometer that he can discern them by sight only without easuring them, as there are some street-porters[1] (*faquins*) or dlers, who will state the weight of what they are to carry thin a pound, in which respect they will surpass the most ilful statistician in the world. It is true that[2] this empiri- l knowledge acquired by a long practice may be very useful r prompt action, such as an engineer very often needs to rform because of the danger to which he is exposed in laying. But this *clear image* or this feeling which we may have of a regular decagon or of a weight of ninety-nine pound consists only in a *confused idea,* since it is of no avail in discovering the nature and properties of this weight or of thi regular decagon, which demands a *distinct idea.* And thi example conduces to the better understanding of the difference of ideas, or rather that of the idea and the image.]

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[1] Erdmann and Jacques omit: "faquins ou," the reading of Gerhardt. — Tr.

[2] Erdmann and Jacques omit: "Il est vray que," the reading of Gerhardt. — Tr.

§ 15.[1] *Ph.* Another example: We are led to believe that w have a positive and complete idea of eternity, which is a much as to say that there is no part of that duration whic is not clearly known in our idea; but, however great may b the duration that is represented, as it is a question of a extension without limits, there always remains a part of th idea beyond what is represented which continues obscure an undetermined; and thence it comes that, in discussions an reasonings concerning eternity or any other infinite, we ar apt to involve ourselves in manifest absurdities.

Th. [This example does not appear to me to square wit your design either; but it is very appropriate to mine, whic is to disabuse you of your notions on this point. F the same confusion of the image with the idea reigns her We have a complete or just idea of eternity, since we have definition of it, although we have no image of it. But th idea of the infinite is not formed by the composition of part and the errors which we meet in reasoning upon the infinit do not arise from the defect of the image.[2]]

§ 16.[3] *Ph.* But is it not true that when we speak of th infinite divisibility of matter, although we have clear ideas the division, we have only very obscure and very confuse ideas of the parts? For I ask whether a man taking th mallest atom of dust he ever saw has any distinct idea f the difference between the one hundred thousandth[1] and he millionth part of this atom?

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[1] Erdmann and Jacques have § 25. Gerhardt and Locke, *Philos. Work* Vol. 1, p. 505 (Bohn's ed.), have § 15.—Tr.

[2] The difficulties and errors in the discussion of the infinite arise not "fr the defect of the image" but from the attempt to imagine or picture th which can only be thought. We can think the infinite and absolute, but cannot form an adequate image or picture of it. The "confusion of the ima with the idea," which Leibnitz here speaks of, is one of the causes vitiati much of the "reasoning upon the infinite" in the history of thought, a lying at the basis of all theories, like those of Hamilton, Mansel, and Spenc which maintain the impossibility on man's part of a knowledge of the infini *Cf.* John Caird, *An Introduction to the Philos. of Religion,* p. 36. New Yor Macmillan & Co., 1880.—Tr.

[3] So Gerhardt and Locke, *Philos. Works* (Bohn's ed.), Vol. 1, p. 505; E mann has § 18; Jacques § 30.—Tr.

Th. It is the same *qui pro quo* of the *image* for the *idea*, vhich I am astonished to see so confused. The possession of n image of so great a smallness is not at all the question. t is impossible according to the present constitution of ur body, and if we could have it, it would be much the same s that of those things which now appear to us *apperceptible;* ut in compensation what is now the object of our imagination vould escape us and become too great to be imagined. Size as no images in itself, and those which it has depend only pon comparison with the organs and other objects, and it is seless here to employ imagination. Thus it appears by all hat you, sir, have said to me here that you are ingenious n devising difficulties without reason, in demanding more han is necessary.]

CHAPTER XXX

OF REAL AND FANTASTICAL IDEAS

§ 1. *Ph.* Ideas in relation to things are real or fantastical, dequate or inadequate, true or false. By *real ideas* I undertand those which have a foundation in nature, and which are onformed to a real being, to the existence of things, or to heir archetypes; otherwise they are *fantastic* or chimerical.

Th. [There is a little obscurity in this explication. The lea may have a foundation in nature, without being conormed to this foundation, as when we maintain that the pereptions we have of color and heat do not resemble any origal or archetype. An idea is also real when it is possible, lthough no existing being corresponds thereto. Otherwise all the individuals of a species were lost, the idea of the pecies would become chimerical.]

§ 2. *Ph.* Simple ideas are all real, for, although [according many] whiteness and coldness are no more in snow than is ain, yet their ideas are in us as effects of powers connected with external things, and these constant effects serve us i distinguishing things as much as if they were exact images o that which exists in the things themselves.

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[1] Erdmann and Jacques read: "la 10,000me et la 1000me." — Tr.

Th. [I have examined this point above: but it appear thereby that you do not always demand a conformity to a archetype, and, according to the opinion (which, however, I d not approve) of those who think that God has arbitraril assigned us ideas, destined to mark the qualities of object without any resemblance or even natural relation, there woul be also in that case less conformity between our ideas an the archetypes than there is between the words which we us by institution in language and the ideas, or the things them selves.]

§ 3. *Ph.* The mind is *passive* as regards its simple idea but the combinations it makes of them to form complex idea where many simple ideas are comprised under one and th same name, have somewhat of the *volitional* element; for on man admits into the complex ideas he has of gold or justice simple ideas which another does not admit.

Th. [The mind is, however, active in reference to simp ideas when it detaches them one from another to consid them separately, — an act which is voluntary as well as th combination of many ideas; whether it is done to call atte tion to a complex idea resulting therein, or whether it is th purpose to comprehend them under the name given to th combination. And the mind cannot be deceived therein pr vided it does not unite incompatible ideas and provided th name is still virginal, so to speak, that is to say, a name which some notion has not already been attached, which migl cause confusion with that which is newly attached thereto, an make arise either impossible notions by joining together wh cannot take place, or notions superfluous and containing son *obreption*,[1] by joining ideas, one of which may and ought be derived from the other by demonstration.]

§ 4. *Ph.* Mixed modes and relations having no other realit than that which they have in *men's minds*, all that is requisi to make these sorts of ideas real is the possibility of existen or of compatibility together.

Th. [*Relations* have a reality dependent upon the mi ike *truths;* but not the mind of men, since there is a supreme ntelligence which determines them all for all time. *Mixed nodes,* which are distinct from relations, may be real accilents. But be they dependent or not dependent upon the nind, it suffices for the reality of their ideas that these modes e *possible* or, what is the same thing, distinctly intelligible. nd for this result it is necessary that their ingredients be *ompossible, i.e.* capable of existing together.]

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[1] *I.e.* Concealment of the truth.—Tr.

§ 5. *Ph.* But the complex ideas of substances, as they are ll formed in relation to things existing outside of us, and s representative of substances such as really exist, are real nly so far as they are combinations of simple ideas really oth united and coexisting in things coexisting without us. n the contrary those are *chimerical*[1] which are composed of uch collections of simple ideas as have never been really nited and found together in any substance; like those which rm a centaur, a body resembling gold, save in weight, and ghter than water, a body similar in relation to the senses, ut endowed with perception, voluntary movement, etc.

Th. [If I take in this manner the terms *real* and *chimeril* otherwise in relation to the ideas of the modes than in lation to those which form a substance, I do not see what mmon notion in each case you give to real or chimerical leas; for the modes are real to you when they are possible, d substances have real ideas with you only when they e existent. But in desiring to tally with existence, we n determine but little whether an idea is chimerical or t, because what is possible, although not found in our ace or time, may have existed formerly or will perhaps me day exist, or may indeed be found already present in other world, or even in ours without our knowing it, like e idea which Democritus had of the Milky Way[2] which the lescopes have verified: so that it seems better to say that ssible ideas only become chimerical when we attach to them thout foundation the idea of effective existence, as those do o promise themselves the philosopher's stone or, as those would do who should believe that there had been a natio of centaurs. Otherwise in not regulating ourselves by existence we shall deviate unnecessarily from the received languag which does not allow us to say that he who speaks in winte of roses or pinks speaks of a chimera, unless he imagines he i able to find them in his garden, as the story is told of Alber the Great[1] or of some other pretended Magician.]

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[1] Locke has: "fantastical," *Philos. Works,* Vol. 1, p. 510 (Bohn's ed.).—

[2] *Cf.* Aristotle, *Meteorologica,* Bk. I., chap. 8, 345^a, 25: "The Milky Way the light of certain stars." Zeller, *Die Philos. d. Griech.*, 3d ed., Vol. 1, 724, note 1; 5th ed., 1892, I. 2 [Vol. 2], p. 897, note 8. — Tr.

CHAPTER XXXI

OF ADEQUATE[2] AND INADEQUATE IDEAS

§ 1. *Ph.* *Real ideas* are *complete* when they represent pe fectly the originals whence the mind supposes them to taken, which they represent, and to which it refers the *Incomplete ideas* represent only a part of these original § 2. All our simple ideas are complete. The idea of whit ness or of sweetness, which is noticed in sugar, is complet because it suffices for this,—that it corresponds entirely to t powers that God has put into this body to produce the sensations.

Th. [I see, sir, that you call *complete* or *incomplete* ide those which your favorite author calls *ideæ adæquatæ* a *inadæquatæ;* you might call them *perfect* or *imperfect.* have sometimes defined *idea adæquata* (a *perfect idea*) as th which is so distinct that all its ingredients are distinct, a such is nearly the idea of a number. But when an idea distinct and contains the definition or the reciprocal mar of the object, it may be *inadæquata* or *imperfect,* viz.: wh

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[1] Albertus Magnus, 1193–1280. Schaarschmidt states that "like many ot scholars of those dark centuries (Michael Scotus, Roger Bacon, etc.) he w suspected of Magic," and adds that "Trithemius in particular, who, moreo takes the philosopher into his protection, gives an account thereof in his *nales Hirsaugienses*, Vol. 2, p. 40. Naudé in his *Apologie des Grands Hom Soupçonnés de Magie*, chap. 18, Bayle in his *Dictionary*, see under Alb Le Grand, and Brucker, *Hist. Philosophiæ*, 3, 793 *sq.*, have likewise defen him." On his life and philosophy, *cf.* Erdmann, *Grundriss d. Gesch. Philos.* §§ 199–202, Vol. 1, pp. 356 *sq.*, and English translation of same; a Stöckl, *Gesch. d. Philos. d. Mittelalters*, Vol. 2, pp. 352 *sq.*, §§ 101–119.—Tr.

[2] Locke's title; the French might be rendered "complete and incomplet as in the text.—Tr.

hese marks or these ingredients are not also all distinctly
nown; for example, gold is a metal which resists the cupel
nd aqua fortis; it is a distinct idea, for it gives the marks
r the definition of *gold;* but it is not perfect for the nature
f cupellation and the working of aqua fortis is not sufficiently
nown to us. Whence it comes that, when there is only an
mperfect idea, the same subject is susceptible of many defini-
ions independent the one of the other, so that we cannot
lways derive one from the other nor see beforehand that they
ust belong to one and the same subject, and then experience
lone teaches us that they all belong to it at once. Thus gold
ay still be defined as the heaviest of our bodies, or the most
alleable, without speaking of other definitions which might
e invented. But we shall be able to see why it belongs
the heaviest of metals to resist these two tests of the assay-
s only when men shall have penetrated farther into the
ature of things; whilst in geometry, where we have perfect
eas, the case is different, for we can prove that the sec-
ons of the cone and of the cylinder, made by a plane, are the
me, *viz.* ellipses, and this cannot be unknown to us, if we
ke notice of it, because the notions we have of them are
rfect. With me the division of ideas into perfect and im-
rfect is only a sub-division of distinct ideas, and it appears
me that only the confused ideas, like that we have of sweet-
ss, of which you, sir, speak, deserve this name; for although
ey express the power which produces the sensation, they
not express it wholly, or at least we cannot know this, for
we comprehended what is in this idea of sweetness we have
could judge whether it is sufficient as a rational expression
all that experience causes us to notice therein.]

§ 3. *Ph.* From simple ideas let us come to the *complex;*
ey are either of modes or of substances. Those of *modes*
the voluntary collections of simple ideas which the mind
ts together *without regard to certain archetypes* or real and
ually existing models; they are complete and cannot be
herwise, because not being copies but archetypes, which the
nd forms in order to avail itself of them in ranking things
der certain denominations, they can lack nothing, because
h includes such a combination of ideas as the mind has
ired to form, and consequently such perfection as it had

planned to give thereto, and we cannot conceive that th
understanding of any one can have a more complete or mor
perfect idea of a triangle than that of a figure of three side
and three angles. He who put together the ideas of dange
of execution, of the trouble that fear produces, of a calm co
sideration of what it would be reasonable to do, and of a
actual application to its execution without being frighten
by the danger, formed the idea of *courage*, and had what h
desired, viz.: a complete idea conformed to his good pleasur
It is otherwise in our ideas of substances in which we mai
tain that which really exists.

Th. [The idea of *triangle* or of *courage* has its archetype i
the possibility of things as well as the idea of gold. And it i
a matter of indifference, so far as the nature of the ide
is concerned, whether it was invented in advance of exper
ence, or whether it was retained after the perception of
combination which nature had made. Combination als
which produces the modes, is not wholly *voluntary* or ark
trary, for we can put together what is incompatible, as tho
do who invent machines for perpetual motion, while othe
can invent those which are good and practicable which ha
no other archetypes with us than the idea of the invent
which has as its archetype the possibility of things or tl
divine idea. Now these machines are substances. We ca
also invent impossible modes, as when we maintain tl
parallelism of parabolas, by imagining that we can find tw
parabolas parallel to each other, like two straight lines
two circles. An idea, then, whether it be that of a mode,
that of a substance, may be complete or incomplete accordi
as we understand well or ill the partial ideas which form tl
total idea: and it is a mark of a perfect idea when it mak
known perfectly the possibility of the object.]

CHAPTER XXXII

OF TRUE AND FALSE IDEAS

§ 1. *Ph.* As truth[1] or falsehood belongs only to proposi-
ons,[2] it follows that when ideas are termed true or false
iere is some tacit proposition or *affirmation;* § 3. or a tacit
ssumption of their conformity to something, § 5. above all
ith what others designate by this name (as when they speak
f justice) *item* to what really exists (as man exists but not
ie centaur) *item* to the essence, upon which depend the prop-
ties of the thing; and in this sense our ordinary ideas of
ibstances are false when we think of certain substantial
rms. Besides, ideas deserve rather to be called accurate
faulty, than true or false.

Th. I believe that true or false ideas might be so under-
ood, but as these different senses do not agree between them-
lves and cannot be conveniently ranked under a common
otion, I prefer to call the *ideas true* or *false* in relation to
iother tacit *affirmation* which they all include, which is that
possibility. Thus possible ideas are *true,* impossible *false.*]

CHAPTER XXXIII

OF THE ASSOCIATION OF IDEAS

§ 1. *Ph.* We often notice something odd in the reasonings
people, and everybody is subject to this. § 2. It is not
one obstinacy or self-love; for often people who are well
sposed are guilty of this fault. It does not indeed suffice to

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[1] *Cf. New Essays*, Bk. IV., chap. 5. — Tr.

[2] *Cf.* Aristotle *De Anima*, III. 6,430ª, 27, and E. Wallace, *Aristotle's Psychol-
y in Greek and English, with Introduction and Notes*, pp. 160, 161, Cam-
idge: University Press, 1882; also *De Interpret.* 1, 16ª, 12, and E. Wallace,
itlines of the Philos. of Aristotle, 3d ed., § 11, p. 27. For Leibnitz, the true
the thinkable, *i.e.* that which is free from contradiction in itself and of
ier truth. Thought-necessity is his criterion of possibility and of truth. —

attribute it to education and to prejudice. § 4. It is rather a kind of madness, and we should be foolish if we should always act thus. § 5. This fault arises from a non-natural connection of ideas, which has its origin in chance or custom. § 6. Inclination and interest enter into it. Certain tracts of the repeated course of animal spirits become beaten roads; when we know[1] a certain air, we find it as soon as we begin it. § 7. Thence arise the sympathies or antipathies which are not born with us. A child has eaten too much honey and has been surfeited by it, and then having become a full-grown man, he cannot hear the name honey without a rising of the stomach. § 8. Children are very susceptible to these impressions, and it is well to be careful of them. § 9. This irregular association of ideas has a great influence in all our actions and passions natural and moral. § 10. Darkness revives the idea of ghosts in children because of the stories told them about them. § 11. You do not think of a man whom you hate without thinking of the evil he has done or may do § 12. You shun the room in which you have seen a friend die § 13. A mother who has lost a very dear child sometimes loses with it all her joy, until time effaces the impression of this idea, which sometimes never[2] happens. § 14. A man perfectly cured of madness by an extremely painful operation acknowledged all his life his obligation to the one who performed this operation; but it was impossible for him to endure the sight of the operator. § 15. Some hate books al their life because of the bad treatment they received in school Some one having once gotten the upper hand of another upon some occasion keeps it always. § 16. A man was found who had learned to dance finely, but could not execute the dance unless there was in the room a trunk like the one which had been in the room where he had learned. § 17 The same non-natural bond is found in the intellectual habits you bind matter to being, as if there were nothing immaterial § 18. The sectarian party in philosophy, religion, and the state is attached to its opinions.

Th. [This remark is important and wholly to my taste, and can be fortified by an infinite number of examples. Descarte

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[1] Gerhardt reads: "sait"; Erdmann and Jacques: "suit," follow. — Tr

[2] Gerhardt reads: "jamais"; Erdmann and Jacques: "pas." — Tr.

ving had in his youth some affection for a squint-eyed per-
n could not prevent himself from having all his life an incli-
tion towards those who had this defect. Hobbes, another
eat philosopher, could not (they say) remain alone in a
rk place, without having his mind frightened by images of
osts, although he did not believe in them, this impression
ving remained from the stories told to children. Many
rsons well informed and sensible, and who are decidedly
perior to superstition, cannot bring themselves to be thir-
en at a repast without being extremely disconcerted, having
metime been impressed by the fancy that one of them must
e during the year. There was a gentleman who, having
en injured, perhaps in his infancy, by a badly fastened pin,
uld not see one in this condition without being ready to fall
to a swoon. A prime minister, who bore in the court of his
ster the name of President, was offended by the title of the
ok of Ottavio Pisani, called *Lycurgus*, and wrote against this
ok, because the author, in speaking of the officers of justice
om he thought superfluous, had named also the Presidents,
d although this term in the person of this minister meant a
ally different thing, he had so attached the word to his
rson that he was wounded in this word. And this is a case
the most usual of the non-natural associations, capable of
sleading, as those of words to things, when indeed there is
y ambiguity. In order the better to understand the source
the non-natural bond of ideas, you must consider what I
ve already said above (Chap. 11, § 11[1]), in speaking of the
sonings of animals, that man as well as the animal is
lined to put together in his memory and imagination what
has observed united in his perceptions and experience. It
in this that all the reasoning, if so it may be called, of
mals consists, and often that of men, so far as they are
pirical and govern themselves only by the senses and
amples, without examining whether the same reason still
force. And as often the reasons are unknown to us, we must
re regard to the examples in proportion to their frequency,
then the expectation or the reminiscence of one perception

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[1] *Cf. ante*, p. 145. Gerhardt has § 1; Erdmann and Jacques § 11; the latter
rence is the correct one, and has therefore been placed in the text of the
slation. — Tr.

on the occasion[1] of another perception which is ordinarily connected therewith is reasonable; particularly when the question is about taking precautions. But as the vehemence of a very strong impression often produces as much effect at once as the frequency and repetition of many moderate impressions would be able to make in a long time, it happens that this vehemence engraves upon the fancy an image as profound and as vivid as long experience.[2] Whence it comes that a chance but violent impression unites in our imagination and memory two ideas, at that time together there,[3] altogether as strongly and durably and gives us the same inclination to connect them and to attend to them one after the other, as if a long usage had verified the connection; thus the same result of association is found, although the same reason does not exist. Authority, party,[4] custom, produce also the same effect as experience and reason, and it is not easy to deliver one's self from these inclinations. But it would not be very difficult to keep one's self from being deceived in these judgments, if men would attach themselves seriously enough to the search for truth, or proceed methodically, when they recognize that it is important to them to find it.]

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[1] Gerhardt reads: "d'une perception à l'occasion," which Erdmann and Jacques omit. — TR.

[2] Erdmann and Jacques add: "auroit pu le faire," could have done. — TR

[3] Gerhardt reads: "qui y estoient ensemble alors, tout aussi fortement e durablement; et nous donne," etc. Erdmann and Jacques, "qui déjà y étaient ensemble, et nous donne," etc. — TR.

[4] Erdmann and Jacques omit: "le parti." — TR.

EW ESSAYS ON HUMAN UNDERSTANDING

Book III. — Words

CHAPTER I

OF WORDS OR LANGUAGE IN GENERAL

§ 1. *Ph.* God having made man to be a social being, has not ly inspired him with the desire, and placed him under the cessity of living with those of his species, but has given m also the faculty of speech which is to be the great instrument and common bond of this society. Hence it is that *rds* arise, which serve to represent and also to explain *eas.*

Th. [I rejoice to see that you are averse to the view of bbes,[1] who did not admit that man was made for society,

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Thomas Hobbes, 1588–1679, in his *De Cive*, 1642, and *Leviathan*, 1651, ntained that man, being by nature a selfish and solitary animal, had no ural impulse for society, and that social union sprang simply from fear from motives of gain, the natural condition being that of universal war. nitz maintains, in agreement with Aristotle and Hugo Grotius, 1583–1645, Nature herself has destined man for society in order not only that he the better and more easily realize his highest being, but that he may ize it at all, such realization being impossible in isolation and solitude. Aristotle, *Polit.* I., 2, 1253^a, 2: ὅτι τῶν φύσει ἡ πόλις ἐστί, καὶ ὅτι ἄνθρωπος φύσει τικὸν ζῷον; III., 6, 1278^b, 19: φύσει μέν ἐστιν ἄνθρωπος ζῷον πολιτικόν, διὸ καὶ ν δεόμενοι τῆς παρ' ἀλλήλων βοηθείας οὐκ ἔλαττον ὀρέγονται τοῦ συζῆν, English translan by B. Jowett, Vol. 1, pp. 4, 78, Oxford: Clarendon Press, 1885; also *Eth.* IX., 9, 1169^b, 3 *sq.*, espec. 16–19: ἄτοπον δ' ἴσως καὶ τὸ μονώτην ποιεῖν τὸν ριον· οὐθεὶς γὰρ ἕλοιτ' ἂν καθ' αὑτὸν τὰ πάντ' ἔχειν ἀγαθά· πολιτικὸν γὰρ ὁ ἄνθρωπος υζῆν πεφυκός, I., 1, 1094^b, 6 *sq.*, English translation by F. H. Peters, pp. 307 3; *cf.* also Zeller, *Philos. d. Griech.*, II., 2 [Vol. 4], pp. 680, 662, 3d ed., 1879. ius, *De Jure Belli et Pacis*, 1625, Preliminary Discourse, § 6: "Amongst hings peculiar to man, is his desire of society, that is, a certain inclination ve with those of his own kind, not in any manner whatever, but peace-conceiving that he has been forced into it by necessity and by the wickedness of those of his species. But he did not consider that the best men, free from all wickedness, united themselves the better to obtain their purposes, as the birds flock together the better to travel in company, and the beavers unite in large numbers to make great dams, in which work a small number of these animals could not succeed; and these dams are necessary to them, to provide reservoirs of water or little lakes, in which they build their huts and catch the fish upon which they feed. This then is the foundation of the society of the animals which are adapted to it, and nowise the fear of their kind, which is rarely found among animals.]

Ph. Very true, and it is the better to cultivate this society that man by nature has his *organs* so fashioned that they are adapted to the formation of the articulate sounds which we call *words.*

Th. [As for *organs*, monkeys have them apparently as suitable as ours for the formation of words, but they do not take the least step in this direction.[1] Thus it must be that they lack an invisible something. We must also consider that we

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ably, and in a community regulated according to the best of his understanding, which disposition the Stoicks termed οἰκείωσις"; quoted from English translation with "all the large notes of Mr. J. Barbeyrac," etc., London Printed for W. Innys and R. Manby, and others, 1738. A French translatio by Jean Barbeyrac, professor of law at Groningen, "with the author's note which had not yet appeared in French, and new notes by the translator,' 2 vols., 4to, Amsterdam, 1724; a later translation into English by Whewell 3 vols., 8vo, Cambridge, 1853; a German translation in J. H. v. Kirchmann' *Philos. Bibliothek*, 3 vols., 12mo, Leipzig, 1879.

In the formation of society, language — λόγος, rational speech — plays a important part, serving as a special means of communication between me *Cf.* Aristotle, *Polit.* I., 2–18, 1253^a; Grotius, *De Jure Belli et Pacis*, Prelim Disc. § 7: "A man grown up . . . has besides an exquisite desire of societ for the satisfaction of which he alone of all animals has received from natu a peculiar instrument, viz. the use of speech." — Tr.

[1] Schaarschmidt states that "this earlier generally diffused view, that th apes had organs of speech — an opinion still at the present day firmly held b the negroes — has already been refuted by Peter Camper," 1722–1789, a di tinguished Dutch anatomist and naturalist, in his *Natuurkundige Verhan elingen over den Orang-Outang an eenige andere Aapsoorten*; *cf.* p. 147 sq of the German translation by J. F. M. Herbell. Düsseldorf, 1791, 4to. Th most important of Camper's works bearing on comparative anatomy, tran lated into French by H. C. Jansen, were published in *Œuvres de P. Camp qui ont pour objet l'histoire naturelle, la physiologie, et l'anatomie compar* Paris, 1803, 3 vols., 8vo. The piece referred to in this note is found in Vol. of this ed. — Tr.

ould *speak, i.e.* make ourselves understood by the sounds of
e mouth without forming articulate sounds, if we availed
urselves of musical *tones* for this effect; but more art would
e necessary to invent a *language of tones,* whilst that of
ords may have been formed and perfected gradually by per-
ns who found themselves in a state of natural simplicity.
here are, however, people like the Chinese, who by means of
nes and accents vary their words, of which they have only a
nall number. Thus it was the opinion of Golius,[1] a cele-
ated mathematician and great linguist, that their language is
tificial, *i.e.* had been invented all at once by some clever man
order to establish verbal intercourse between the large num-
r of different nations inhabiting this great country which
e call China, although this language may now be found
tered by long use.]

§ 2. *Ph.* [As orang-outangs and other monkeys have organs
thout forming words, we can say that parrots and some
her birds have words without language], for we can train
ese birds and many others to form sounds quite distinct;
t they are nowise capable of language. Man only is in a
ndition to avail himself of these sounds as signs of internal
nceptions, in order that thereby they may be manifested to
hers.

Th. [I believe in fact that apart from the desire of making
rselves understood we should never have formed language;
t being formed, it further serves man in reasoning within
nself, both by the means words give him of remembering
abstract thoughts, and the benefit he finds in availing him-
f in reasoning of characters and surd thoughts; for he
uld require too much time, if he were obliged to explain
rything and always to substitute definitions in the place of
ms.]

3. *Ph.* But as the multiplication of words would produce

Jacob Gohl—Latin, Golius—1596–1667, an eminent Dutch orientalist,
distinguished himself at Leyden University in classics, mathematics, and
osophy, was a pupil of Erpenius in Arabic, and in 1624 succeeded him as
essor of Arabic at Leyden. In 1629 he returned from Asia Minor and the
, where he had spent four years, bringing with him a large and valuable
ction of Mss. which he placed in the library of the university. His prin-
l work, still to-day esteemed, is the *Lexicon Arabico-Latinum,* 1653,
.—Tr.

confusion in their use, if a distinct term were necessary to designate each particular thing, language has been further perfected by the use of general terms when they signify general ideas.

Th. [*General terms* serve not only for the perfection of languages, but they are necessary even to their essential constitution. For if by *particular things* we mean individual things, it would be impossible to speak if there were only *proper* names and not *appellatives*, *i.e.* if there were words only for the individuals, since at every moment something now presents itself (to the mind) when individuals, accidents, and particularly acts, which are most frequently designated, are in question. But if by particular things we understand the lowest species (*species infimæ*), besides the fact that it is difficult very often to determine them, it is manifest that they are already universals formed upon similitude. Then as the question is only of a similitude more or less extended, according as we speak of genera or species, it is natural to indicate every sort of similitude or agreement and consequently to employ general terms of all degrees; and indeed the most general being less burdened with relation to the ideas or essences they include, although they are more comprehensive in relation to the individuals to which they apply, were very often the easiest to form and are the most useful. Thus you see that children and those who know only little of the language which they wish to speak, or of the matter of which they speak, avail themselves of general terms as thing, plant, animal, instead of employing the proper terms which they lack. And it is certain that all *proper* or individual names were originally *appellative* or general.[1]]

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[1] Leibnitz seems here to be in error in deciding from a logical or meta physical point of view that language originated in or proceeded from genera terms and relations rather than in those which are individual. In the orde of experience the individual thing or relation is first, and first receives it name either wholly arbitrarily or by convention, or by this in combinatio with natural imitation or suggestion; the generalizing process and its result the general name or term, comes afterwards. Children, it is true, use term of general import, but with no consciousness that they are general. Every thing is for them individual, particular, separate and by itself until continue observation and increasing knowledge enable them to detect similarities an differences and to classify and generalize accordingly. Then only do they strictly speaking, possess or use general terms. — TR.

Leibniz appears closer to [illegible]
[illegible] general terms or
[illegible] by [illegible]

§ 4. *Ph.* There are also words which men employ not to ignify an idea, but the lack or absence of a certain idea, as othing, ignorance, sterility.

Th. [I do not see why we could not say that there are *rivative ideas,* as there are negative truths, for the act of enial is positive. I had already touched upon this.]

§ 5. *Ph.* Without disputing about this point, it will be more seful to approach a little nearer the origin of all our notions nd knowledge, to observe how the words employed to form tions and notions wholly removed from the senses, derive ieir *origin* from sensible ideas, whence they are *transferred* significations more abstruse.

Th. [The fact is our needs have compelled us to leave the atural order of ideas, for this order would be the same for igels, men, and all intelligences in general, and would have to followed by us, if we had no regard for our interests. It s been necessary to attach thereto what the occasions and cidents to which our species is subject have furnished us; id this order gives not the *origin of the notions,* but so to speak ie *history of our discoveries.*[1]]

Ph. [Very true, and it is the analysis of words which may ach us by means of the names themselves this concatenation hich that of the notions cannot give by means of the reason, hich you have brought forward.] Thus the following words: *agine, comprehend, to attach, conceive, instil, disgust, trouble, nquillity,* etc., are all derived from the operations of sensible ings and applied to certain modes of thought. The word *irit* in its primary signification is breath,[2] and *angel* signifies nessenger. Whence we can conjecture what kind of notions

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[1] "The natural order of ideas," according to Leibnitz, proceeds from the ieral to the particular, from the abstract to the concrete, while language ws that "we have advanced from sense-impressions to abstract ideas," l thus "expresses not the *essence* of our knowledge, but only the history of development. In a still broader sense the history of language is the history the development of the human spirit in general." — Tr.

[2] *Cf.* the Hebrew רוּחַ (Spinoza, *Tract. Theol. Polit.*, chap. 1, *Opera*, ed. Van ten and Land, Vol. 1, p. 384; English translation by Elwes, Vol. 1, p. 19); Greek πνεῦμα from πνεῖν (Cremer, *Bib. Theol. Lexicon of N. T. Greek*, 2d glish from 2d German ed., p. 504, Edinburgh: T. and T. Clark, 1878, says t as "*the element of life*" . . . "in a *physiological* sense, we often find it νεῦμα') in profane Greek, especially in the poets and in later Greek; in a *chological* sense, as the element of human existence and personal life, *er*"); and the Latin *spiritus* from *spirare.* — Tr.

ffer to particula..

they had who spoke these first languages and how nature will suggest unexpectedly to men the origin and the principle of all their knowledge by the terms themselves.

Th. [I have already remarked to you that in the *credo* of the Hottentots they called the Holy Spirit by a term which signifies among them a breath of air benign and sweet.[1] The same is true as regards the majority of other words, and indeed the fact is not always recognized because most frequently the true etymologies are lost. A certain Dutchman, with little regard for religion, abused this truth (that the terms theology, ethics, and metaphysics are taken originally from gross things) in order to ridicule theology and the Christian faith in a little Flemish dictionary, in which he gave to the terms definitions or explications not such as usage demands, but such as the original force of the words seemed to bear, and put upon them a malicious interpretation; and as he elsewhere had given indications of impiety he is said to have been punished in the *Raspel-huys*.[2] It will, however, be well to consider *this analogy of sensible and non-sensible things* which has served as the basis of *tropes:* a matter that you will understand the better by considering a very extended example such as is furnished by the use of *prepositions*, like *to, with, from, before, in, without, by, for, upon, towards* (*à, avec, de, devant, en, hors, par, pour, sur, vers*), which are all derived from place, from distance, and from motion, and afterwards transferred to every sort of change, order, sequence, difference, agreement. *To* (*à*) signifies approach, as in the expression: I go *to* (*à*) Rome. But as in order to attach anything we bring it near that to which we wish to unite it, we say that one thing is attached *to* (*à*) another. And further, as there is, so to speak, an immaterial attachment, when one thing follows the other from moral reasons; we say that what follows the movements and volitions of any one belongs *to* (*à*) that person or adheres to him as if it gave signs to this person to go near it or with it. A ody is *with* (*avec*) another when they are in the same place; ut they say also that a thing is *with* (*avec*) that which is found the same time, in the same order, or part of an order, or hich concurs in one and the same act. When we come *from* *le*) any place, the place has been our object through the ensible things it has furnished us, and it is still in our emory, which is entirely filled with it; and thence it comes, at the object is signified by the preposition *of* (*de*) as in the pression, the question is *of* (*de*) that, they speak *of* (*de*) at, *i.e.* as if it arose from it. And as what is included in y place or in any whole is supported by and carried away ith it, the accidents are in the same way considered as *in* *lans*) the subject, *sunt in subjecto, inhærent subjecto.* The article *upon* (*sur*) is also applied to the object; they say he *upon* (*sur*) this matter, very much as a workman is *upon* *ur*) the wood or *upon* (*sur*) the stone, that he cuts or forms; d as these analogies are extremely variable and do not de-end on any determinate notions, it thence comes that nguages vary much in the use of these *particles* and *cases* hich the prepositions govern, or rather in which they are und as things understood and virtually included.]

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[1] *Cf.* Book I., chap. 3, § 8, Th. The Apostle's Creed, the Ten Commandments, and the Lord's Prayer in the Hottentot language, as sent to Leibnitz by N. Witsen, are given in Dutens, *Leibnit. opera omnia*, Vol. 6, Pt. 2, pp. 204–206. Schaarschmidt remarks that "this observation of both philosophers, that the meaning of words has proceeded and still proceeds from the concrete to the abstract, is the guide to sound etymology and word-explanation." — TR.

[2] Erdmann and Jacques have: "Raspel-huyss." — TR.

CHAPTER II

ON THE SIGNIFICATION OF WORDS

§ 1. *Ph.* Now as words are employed by men as signs of eir ideas, we may ask in the first place how their words have en determined; and we find that it is not by any natural nnection existing between certain articulate sounds and cer-n ideas (for in this case there would be only one language ong men), but by an *arbitrary institution* in virtue of which iven word has been purposely made a sign of a given idea.[1]

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[1] For early discussions of the nature and origin of language, and the ques-whether words were given by nature or convention, *cf.* Plato, *Cratylus*, glish translation by B. Jowett, *The Dialogues of Plato*, 2d ed., 1875, Vol. 2, 03 *sq.*; 3d ed., 1892, Vol. 1, p. 323 *sq.*, New York: Macmillan & Co.; Aristo-*De Interpret.*, 2, 16^a, 19 *sq.*; E. Wallace, *Outlines of the Philos. of Aris-e*, 3d ed., § 11, p. 27. For modern discussions, *cf.* W. D. Whitney, *Language*

Th. [I know it has been customary to say in the schools and almost everywhere else that the *meanings* of words are arbitrary (*ex instituto*) and it is true that they are not determined by a natural necessity, but they are nevertheless determined by reasons sometimes natural, in which chance has some share, sometimes moral, where choice enters. There are perhaps some artificial languages which are wholly of choice and entirely arbitrary, as that of China is believed to have been, or as those of George Dalgarno[1] and the late Mr. Wilkins,[1] bishop of Chester. But those which are known to have been coined from languages already known, are from choice mixed with what there is of nature and chance in the languages they suppose. Thus it is in the case of those languages which thieves have coined in order to be understood only by those of their gang, which the Germans call *Rothwelsch*,[2] the

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and the Study of Language, Lect. XI., p. 395 *sq.*, 4th ed., New York, 1869 B. Jowett, in his *Introduction* to Plato's *Cratylus*, *op. cit.*, 2d ed., Vol. 2, p. 18 *sq.*; 3d ed., Vol. 1, p. 281 *sq.*; H. Steinthal, *Einleitung in die Psychologie un Sprachwissenschaft*; Herm. Paul, *Principien der Sprachgeschichte*, Halle 1880; B. Delbrück, *Einleitung in das Sprachstudium*, Leipsic, 1880, 2d ed. 1884. Leibnitz rightly points out that both nature and freedom of choic share in the formation of language. "Nature furnishes to a certain exten the material which the mind in its progressive self-absorption shapes withi certain limits arbitrarily; and every human individual in the use of th language already formed is himself still so situated as to be able up to certain point freely to appropriate and use that which is given." — Tr.

[1] George Dalgarno, c. 1626–1687, published at London in 1661, his *Ars signorum, vulgo character universalis et lingua philosophica. Qua poterunt homines diversissimorum idiomatum, spatio duarum septimanarum, omni animi sua sensa (in rebus familiaribus) non minus intelligibiliter, sive scribendo, sive loquendo, mutuo communicare, quam linguis propiis vernaculi* from which Bishop John Wilkins, 1614–1672, derived the idea of his *Essa towards a real character and a philosophical language with an alphabetic dictionary*. London, 1668. For Leibnitz's plan of a General Characteristi (*Characteristica Universalis — Spécieuse générale*) and the extent to whic he followed Dalgarno and Wilkins, *cf.* Trendelenburg's paper: *Ueber Leibn zens Entwurf einer allgemeinen Charakteristik*, in his *Historische Beiträg zur Philos.*, Vol. 3, p. 1 *sq.*, Berlin, 1867; *cf.* also Gerhardt, *Die philos. Schrif v. G. W. Leibniz*, Vol. 7, p. 3 *sq.*; Vol. 3, p. 216; Dutens, *Leibnit. opera omni* Vol. 6, p. 262. Dalgarno is credited with the invention of the first manu alphabet. His works were reprinted at Edinburgh, 1834, 4to. — Tr.

[2] *Cf.* Avé Lallemant, *Das deutsche Gaunerthum*, 4 vols., Leipzig, 1858–186 in which, says Schaarschmidt, "the so-called Rothwälsch, the artificial la guage of thieves in Germany, prominent already in the sixteenth and more in the seventeenth century, is treated with especial thoroughness of deta In this work it is shown that the Hebrew especially has contributed to th *Gaunersprache* a strong word-contingent, while its grammar is conformed

Italians *Lingua Zerga*,[1] the French *Narquois*, but which they usually form upon (the basis of) the languages commonly known to them, either by changing the received significations of the words by means of metaphors, or by making new words by means of a composition or derivation in their own fashion. Languages are also formed through the intercourse of different peoples, either by mingling indifferently neighboring languages, or as most frequently happens, by taking the one as a base which is mutilated and altered, mixed and corrupted by neglecting and changing that which it observes, and even by grafting thereupon new words. The *Lingua Franca*, which is used in the commerce of the Mediterranean, is made from the Italian, and no regard is paid to the rules of grammar. An Armenian Dominican, with whom I conversed at Paris, had himself made, or perhaps learned from his fellows, a kind of *Lingua Franca*, made from Latin, which I found intelligible enough, although it had neither case, nor tense, nor other inflections, and he spoke it with ease, being accustomed to it. Father Labbé,[2] a French Jesuit, very learned, known by many other works, has made a language of which Latin is the base, which is easier and has less constraint than our Latin, but which is more regular than the *Lingua Franca*. He has made a book expressly of it. As for the languages which are found made a long time ago, there are but few which are not greatly

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he German. In Italy the *Gaunersprache* bears the name Gergo, which correponds to the French Argot. To what extent in Leibnitz's time attention was directed to the Rothwälsch the romance literature shows; but especially the "*Gesichte Philanders von Sittewald*," a remarkable work, in which, under the name of Philander von Sittenwald, the author, Joh. Mich. Moscherosch, 1600–1669, a German litterateur, whose true name was Kalbkopf, has given a series of satirical pictures of the caprices and the vices of society in his time, and which placed him among the best prose writers of his century. It was pubished at Strasburg, 1644–1650, 2 vols., 8vo. — Tr.

[1] Erdmann and Jacques read: "Gergo." — Tr.

[2] Philip Labbé, 1607–1667, a learned French chronologer, a man of vast memory, astonishing erudition, and great mental activity; a voluminous writer, and though gentle in personal character, a fierce and abusive controversialist. Leibnitz mentions him in a letter, July 15, 1709, to Geheimrath von Ilgen; *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 7, 36: "noch des P. Labbé der die Lateinische mittelst einiger Veränderungen zur allgemeinen Sprach machen wollen)." He was the author of *Concordia chronologica, technica et istorica*, 1656; but is chiefly known to-day by his work on Latin pronunciaion, *Eruditæ pronuntiationis catholici indices*, enlarged by E. Leeds, and republished in London, 1751. — Tr.

altered to-day. This is evident by comparing them with thei ancient books and monuments which remain. The old Frencl approached nearer the Provençal and the Italian, and we se the Théotisque[1] with the French or Romance rather (some times called *Lingua Romana rustica*) as they were in th ninth century after Jesus Christ in the forms of the oaths o the sons of the Emperor Louis le Débonnaire, which Nithard their kinsman, has preserved for us.[2] We find little elsewher of so old French, Italian, or Spanish. But for the Théotisqu or ancient German, there is the gospel of Otfried,[3] a monk c

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[1] *Cf.* Grimm, *Deutsches Wörterbuch*, sub "Deutsch." — Tr.

[2] For the text of these famous oaths, taken at Strasburg, Feb. 14, 842, c Nithard, c. 790–c. 858, *Hist.*, written, at the command of Charles the Bal between 841 and 843, Bk. III., chap. 5, pp. 38, 39, ed. Pertz, and Pertz, *Mon menta Germaniæ Historica*, Vol. 2, pp. 665, 666, where they are preserved in tl old Romance — *lingua Romana rustica* — and old German — *lingua Teotis* — languages. *Cf.* also Dutens, *Leibnitii opera omnia*, Vol. 6, Pt. II., pp. 14 144, where "utramque formulam ('jurarunt *Ludovicus* Romanè, *Carol* Teutonicè') eodem significatu, conceptis verbis ex *Nithardo* exhibebim interlineariter colligatam, quia sibi verbotenus respondent, et ipso parallelisn illustrantur." The best edition for the study of the old German part of tl oaths is in Karl Müllenhoff u. Wilhelm Scherer, *Denkmäler deutscher Poes u. Prosa aus VIII–XII Jahrh.*, Denkm. No. 67, 2 Ausg. Berlin, 1873; 3 Au bearbeitet v. E. Steinmeyer. Vol. 2 contains notes summing up the best resul of critical study. Explanations of the old German text have also been ma by J. Grimm, 1785–1863, in his *Kleinere Schriften*, Vol. 6, pp. 403 *sq.*, s also *Monumenta Germaniæ Historica*, Vol. 2, pp. 465 *sq.;* and by H. Massmann, 1797–1874, in his *Die kleinen Sprachdenkmale des VIII bis X Jahrh.* Quedlinburg u. Leipzig, 1839. Fr. Ch. Diez, 1794–1876, "the re founder of Scientific Romance philology and linguistics," in his *Altromanisc Sprachdenkmäler*, Bonn, 1846, has explained the Romance portion of the te and gives, *op. cit.* pp. 3–5, a good portion of the literature on this interesti linguistic monument. The best textual notes on the Romance or old Fren part of the oaths are in W. Foerster u. E. Koschwitz, *Altfranzösisches Uebun buch*, Heilbronn, 1884; while the best facsimile of the whole fragment, bc French and German, is the Album of the Société des anciens textes franç (*Les plus anciens monuments de la langue française*), Paris, 1875. The Romance text, the earliest specimen of French in existence, with a mode French translation, is found in Brachet, *A Historical Grammar of the Fren Tongue*, 6th English, from 20th French ed., pp. 17, 18, Oxford: Clarend Press, 1884; while to these a Latin version is added for comparison in t article on the "Latin Language" *prope fin.*, in the *Encyclop. Brit.*, 9th e Vol. 14, pp. 340, 341 (American Reprint). — Tr.

[3] The gospel of Otfrid, usually called the *Life of Christ*, was written in t South-Frankish dialect of the Old High German in 867 or 868, and dedicat to King Louis the German. Editions of it were published by Matthias Flac Illyricus, 1520–1575, at Basle in 1571, 8vo, "a book as curious as rare," a by Schilter-Scherz in the *Thesaurus antiquitatum teutonicum*, Vol. 1. Ulm 1727–1728, 3 vols., fol. These have now no critical worth, but merely an histori

Veissenburg of this same time, which Flacius has published
nd which Schilter[1] wished to edit anew. The Saxons who
assed into Great Britain have left us books still more ancient.
hey have a version or paraphrase of the beginning of Genesis
nd of some other parts of the Sacred History, made by a
ædmon whom Bede already mentions.[2] But the most ancient
ook, not only of the Germanic languages, but of all the lan-
uages of Europe, except Greek and Latin, is that of the
ospel of the Goths of the Pontus Euxinus, known by the
ame of *Codex Argenteus*,[3] written in characters entirely pecu-

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iterest and value. *Cf.* H. Paul, *Grundriss d. germ. Philologie*, II, 214, Stras-
urg, 1889—. It has also been edited by E. Th. Graff, Königsberg, 1831, 4to, an
lition good in its day, but now antiquated; and more recently by J. Kelle,
ith grammar and glossary in 3 vols., Regensburg, 1856–1881; by P. Piper,
aderborn, 1878, containing the fullest critical apparatus; and by Erdmann,
alle, 1882, the most convenient. Piper has also published a student's edition,
reiburg, 1884; and Kelle a translation, *Christi Leben und Lehre besungen*
m Otfrid, Prag. 1870. *Cf.* also W. Scherer, *Gesch. d. deutschen Lit.* 6th ed.,
. 48–51. Berlin, 1891; Eng. trans., from 3d Germ. ed., Vol. 1, pp. 44–46,
ew York, Chas. Scribner's Sons, 1886. To Otfrid is due, for the most part,
e introduction into German poetry, in place of the earlier alliterative metre,
the rhymed stanza imitated from that of the Latin Church hymns. — Tr.

[1] John Schilter, 1632–1705, a distinguished German jurisconsult and archæ-
ogist, Professor of Law at Strasburg, and author of the work referred to in
te 3, *Thesaurus antiquitatum teutonicum*, which was edited, after Schilter's
eath, by Joh. Geor. Scherz, and is filled with documents of great value for
e civil and literary history of Germany at the time of the Carlovingians.
hilter was led to linguistic studies through his legal and antiquarian investi-
ations. *Cf.* Dutens, *Leibnit. opera omnia*, 6, Pt. II., p. 222, where Leibnitz
marks: "I am told that Mr. Schilter, of Strasburg, is none too well, and
he is an old man, I fear that his edition of Notger and Otfried will not
pear. . . . Mr. Schilter makes use, moreover, of the Gothic Gospels of
lfilas, of the Anglo-Saxon, and also of the Icelandic, as well as of other old
oks and glossaries; for we must unite the different dialects of all the Teu-
nic peoples in order to explain the old books." — Tr.

[2] On Cædmon, died 680, *cf.* Bede, *Eccles. Hist.*, Bk. IV., chap. 24, pp. 217–
0, 5th ed. (Bohn's Lib.), London: Geo. Bell and Sons, 1884; H. Morley, *Eng-*
sh Writers, Bk. II., chap. 4, Vol. 2, p. 71 *sq.*, London: Cassell and Co., 1888;
Ten Brink, *Early Eng. Lit.*, trans. by H. M. Kennedy, pp. 39–48 and 371–
6, New York: Henry Holt & Co., 1884; S. A. Brooke, *Hist of Early Eng. Lit.*,
. 275–340, New York: Macmillan & Co., 1892. For the text of the poems
cribed to him, *cf.* Benj. Thorpe, *Cædmon's Metrical Paraphrase of Part of*
e Holy Scripture in Anglo-Saxon; with an Eng. Trans., Notes, and a Verbal
dex, London: 1832; C. W. M. Grein, *Bibliothek der Angel-Sächsischen*
oesie, 1857, Vol. 1; new ed. by R. Wülker, Vols. 1–3, 1883–1889, still in prog-
ss; the vol. containing Cædmon has not yet (1892) appeared; T. W. Hunt,
edmon's Exodus and Daniel, Boston: Ginn & Co., 4th ed., 1889. — Tr.

[3] The Codex Argenteus — Silver Codex — so called because written in silver
d gold letters upon purple-stained vellum and bound in silver, as was the

liar, which was found in the ancient monastery of the Benedictines of Werden in Westphalia, and has been carried into Sweden, where it is preserved, as with reason it should be, with as much care as the original of the Pandects in Florence, although this version was made by the Eastern Goths and in a dialect far removed from the Scandinavian German; but it is because they believe, with some probability, that the Goths of the Pontus Euxinus came originally from Scandinavia, o at least from the Baltic Sea. Now the language or the dialec of these ancient Goths is very different from the moder German, although it has the same linguistic basis. Th ancient Gallic was still more different, to judge by the lan guage most nearly approaching the true Gallic, which is tha of the country of Wales, Cornwall, and Basse-Bretagne; bu the Irish differs therefrom still more and shows us traces of Britannic, Gallic, and Germanic language, still more ancient But all these languages come from one source, and may b

case with costly Mss. in those days, originally consisted of 330 leaves co taining the Gospels in the following order: Matt., John, Luke, Mark, tran lated into the Gothic language, about the middle of the fourth century, b Bishop Ulfilas (Vulfila), 311–383. Only 177 leaves now remain. *Cf.* F. I Stamm, *Ulfilas*, 1872, new ed. by M. Heyne, Paderborn, 1885, Einleitung, p. i The Ms., like all existing Gothic Mss., seems to have been written in Ital during the rule of the East Goths in the first half of the sixth century, an after many adventures, was at last carried in 1669 to Upsala, where it no is. It is one of the few sources of our knowledge of Gothic, and, as Ulfil was a fine scholar, and made his translation of the New Testament from t Greek original, with frequent comparison of the Latin versions, it is of so value in New Testament textual criticism. Editions of Ulfilas may be nam as follows: The two earlier, by H. C. v. d. Gabelentz and J. Loebe, 3 vols Altenburg u. Leipzig, 1843–1846, and H. F. Massmann, Stuttgart, 1855–185 2 vols. 8vo, rest upon still older single editions with many faults. C H. Paul, *Grundriss d. germ. Philologie*, II, 69, Anm. 2. The critical editio of A. Uppström: *Codex Argenteus*, Upsala, 1854–1855; *Decem codicis ar rediviva folia*, ib. 1857; *Fragmenta gothica selecta*, ib. 1861; *Codices gothi Ambrosiani*, Stockh. u. Leipzig, 1864–1868, in whose work for the first tin was laid an entirely secure foundation for Gothic text-criticism, and up whom the later editions rest. *Cf.* H. Paul, *op. cit.*; and Stamm-Heyn *Ulfilas*, Einl. p. xi. The larger ed. of E. Bernhardt, *Vulfila, oder die gotisc Bibel*, Halle, 1875, is the best for comparison with the Greek; while his small ed., *Die gotische Bibel des Vulfila*, Halle, 1884, and that of Stamm-Heyne cit above are the most convenient. The best introduction to Gothic in English J. Wright, *A Primer of Gothic*, London and New York, Macmillan & C 1892. *Cf.* also W. Scherer, *Gesch. d. deutschen Lit.*, 6th ed., pp. 33–36, En trans., Vol. 1, pp. 28–32; Waitz, *Das Leben des Ulfilas*, 1840; Krafft, *Kirche geschichte d. Deutschen Völker*, Abth. 1, 1854, and article "Ulfilas," in Herzo *Realencyklopädie*, Vol. 16, 1885.—TR.

aken as modifications of one and the same language, which ay be called the *Keltic.* Thus the ancients called both the ermans and the Gauls *Kelts;* and in going back farther in rder to understand the origin both of the Keltic and the atin and the Greek, which have many roots in common with he Germanic or Keltic tongues, we may conjecture that this act arises from the common origin of all these peoples de- cended from the *Scythians*, who, having come from the Black ea, passed the Danube and the Vistula, and of whom one part ay have gone into Greece, the other have filled Germany and he Gauls; a consequence of the hypothesis which makes the uropeans come from Asia. The *Sarmatian* (supposing it to e the Sclavonic) has at least half its origin either Germanic r common with the Germanic. The case appears to be some- hat similar, indeed, in the Finnish language, which is that of he most ancient Scandinavians, before the Germanic peoples, e. the Danes, Swedes, and Norwegians, had taken possession f the land which is the best and nearest the sea; and the nguage of the Finns or of the northeast of our continent, hich is also that of the Lapps, extends from the German or orwegian Ocean even to the Caspian Sea (although inter- upted by the Sclavic peoples which have been thrust in etween the two) and has some relation to the Hungarian, aving come from the countries which are now in part under e Muscovites. But the Tartar language, which has filled the ortheast of Asia, with its variations, appears to have been that f the Huns and Cumans as it is of the Uzbeks or Turkomans, f the Kalmuks and of the Mongols. Now all these languages of cythia have many roots common among themselves and with rs, and it is found that even the Arabic (under which the ebrew, the ancient Punic, the Chaldee, the Syriac, the Ethi- oic of the Abyssinians are to be comprised) has so great a umber of them and an agreement so manifest with ours that cannot be attributed to chance alone, nor even to commerce one, but rather to the migrations of the peoples. So that ere is nothing in this to combat and not rather to favor the ew of the common origin of all nations, and of a primitive ot language.[1] If the Hebrew or the Arabic approaches the nearest to it, it must be at least much changed, and the German seems to have preserved more completely the natural and (to use the language of Jacob Boehme) the Adamic;[1] fo if we had the primitive language in its purity, or sufficiently preserved to be recognizable, the reasons of the connection whether natural or of an arbitrary institution would necessarily appear wise and worthy of the primitive author. Bu supposing that our languages are derivative as regards thei foundation, they nevertheless have something primitive i themselves which has arisen from them in relation to new root words[2] since formed among them by chance but upo natural grounds. Those which signify the sounds of animal or have come from them furnish examples. Such, for example, is the Latin *coaxare* attributed to the frogs, which ha some relation to *couaquen* or *quaken* in German. Now i

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[1] Leibnitz was the first who, from the point of view of a presentiment of the ndred connection, first of the European, and then of the remaining lan-

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guages, demanded and himself urged on the comparative study of language and in this, as in so many other things, was far in advance of his time. Fo his linguistic work, *cf.* Dutens, *Leibnit. opera omnia*, Vols. 5 and 6. — TR.

[1] Jacob Boehme, 1575–1624, a celebrated theosophist, in whom Protestan mysticism reached its highest point. He is called *philosophus teutonicus*, an "in reality through him, for the first time in Germany, did philosophy com forward with a characteristic stamp"; Hegel, *Vorlesung. ü. d. Gesch. d. Philos* Vol. 3, p. 270, 2d ed., Berlin, 1833. O. Pfleiderer, *Religionsphilosophie*, Vo 1, p. 20, 2d ed., Berlin, 1883, says, "The theosophy of Boehme shows itself the direct forerunner of the metaphysic of Leibnitz, 1646–1716, Schelling, 177 1854, Baader, 1765–1841, Schopenhauer, 1788–1860, etc." For his philosoph etc., *cf.* his *Sämmtliche Werke*, hrsg. v. K. W. Schiebler, Leipzig, 1831–47, ed., 1861 *sq.*; also Hegel, *op. cit.*, Vol. 3, pp. 270–297; Stöckl, *Gesch. d. Philo d. Mittelalters*, Vol. 3, pp. 569–608, §§ 122–128; O. Pfleiderer, *op. cit.*, Vol. pp. 15–23, Eng. trans., Vol. 1, pp. 13–23; B. Pünjer, *Gesch. d. Christ. Religion philos.*, 1880–83, Vol. 1, pp. 180–194; Eng. trans., Vol. 1, pp. 243–265, T. ar T. Clark, Edinburgh, 1887. Vaughan, *Hours with the Mystics*, Vol. 2, pp. 79–12 3d ed., London: 1879. According to Boehme, *cf. Das dreyfache Leben*, chap. 2–4; *Princ.*, 10, 8–12; *Myst. Mag.*, chap. 15, 1–9, etc.; also Stöckl, *op. cit.*, 125, 126, Vol. 3, pp. 586 *sq.*; Adam, who stands here in Leibnitz's text "as t symbol and representative of the original unity of the race," and of its la guage, "was destined to propagate his race in angel-like purity witho endangering its integrity." Leibnitz, while acquainted with Boehme's wri ings, made little use of them in his own thinking, and speaks thus of them a letter to Fr. S. Loeffler, Jan. 13, 1693, *cf.* Dutens, *op. cit.*, Vol. 5, p. 409: "T controversies over the opinions of Boehme I consider idle, and think that neither understood himself nor have others understood him." — TR.

[2] Gerhardt's text reads: "Qui leur est survenu par rapport à des mo radicaux nouveaux, formés depuis chez elles," etc. Erdmann and Jacqu read: "qui leur est survenu par rapport à des mots radicaux et nouveau radicaux formés depuis chez elles," etc.; *i.e.* new root words and new roo since formed among them, etc. — TR.

eems that the noise of these animals is the primordial root of ther words of the German language. For as these animals ake much noise, the term is attributed to-day to idle talk and babblers, who are called *quakeler* in the diminutive form; ut apparently this same word *quaken* was formerly underood in a good sense and signified all sorts of sounds made ith the mouth not even excepting speech. And as these ounds or noises of animals are an evidence of life, and as we now thereby before we see it that there is life there, *quek* in ld German has come to signify life or living, as may be bserved in the most ancient books, and there are also traces f the same in the modern language, for *Quecksilber* is quicklver (*vif-argent*), and *erquicken* is to strengthen, and, as it ere, to vivify or recreate after exhaustion or some great bor. Certain weeds are called also in Low German *Quäken*, ive so to speak and running, as they say in German, which read and propagate themselves easily in the fields to the etriment of the grain; and in English *quickly* means promptly d in a wide-awake manner. Thus we may consider that as gards these words the German language may pass as the imitive, the ancients having no need to borrow elsewhere a und which is the imitation of that of the frogs. And there e many others in which the same thing appears. For it ems that the ancient Germans, Kelts, and other peoples lied to them have employed by a natural instinct the letter R signify a violent movement and a noise like that of this tter.[1] It appears in ῥέω, *fluo*, *rinnen*, *rüren* (*fluere*), *rutir fluxion*), the *Rhine*, *Rhone*, *Roer* (*Rhenus*, *Rhodanus*, *Eridas*, *Rura*), *rauben* (*rapere*, *ravir*), *Radt* (*rota*), *radere* (*raser*), *uschen*, a word difficult to translate into French; it signifies noise like that which the wind or a passing animal stirs up the leaves or the trees, or is made by a trailing dress; *kken* (to stretch with violence), whence it comes that *reichen* to reach; that *der Rick* signifies a long stick or perch useful r suspending anything, in this kind of Plat-tütsch or Low xon which is (spoken) near Brunswick; that *Rige*, *Reihe*,

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[1] *Cf.* Plato, *Cratylus*, 434 *sq.*; English Translation by B. Jowett; 2d ed., 5, Vol. 2, p. 259 *sq.*; 3d ed., 1892, Vol. 1, p. 381 *sq.*, where the author has eady made an attempt, similar to that made here and many times before Leibnitz, to fix the original significance of single letters in the formation words. — Tr.

regula, regere, refer to length or a straight course; and tha *Reck* has signified a thing or person very extended and long and in particular a giant, and then a powerful and rich man as it appears in the *reich* of the Germans and in the *riche* o *ricco* of the Semi-Latins. In Spanish *ricos hombres* means th nobles or chief men; and this makes it plain at the same tim how metaphor, synecdoche, and metonymy have caused word to pass from one signification to another without our bein able always to trace them. This noise and violent movemen is noticed also in *Riss* (rupture) with which the Latin *rump* the Greek ῥήγνυμι, the French *arracher*, the Italian *straccio* ar connected. Now as the letter R signifies naturally a violen movement, the letter L designates a gentler one. Thus we se that children and others who find the R too harsh or too diffi cult to pronounce substitute for it the letter L, saying, fo example, *mon lévelend pèle.*[1] This gentle movement appears i *leben* (*vivre* — live), *laben* (*conforter* — comfort, *faire vivre* — make live), *lind, lenis, lentus* (*lent* — slow), *lieben* (*aimer* — love), *lauffen* (*glisser promptement comme l'eau qui coule* — t glide quickly like flowing water), *labi* (*glisser* — to touc lightly, *labitur uncta vadis abies*[2]), *legen* (*mettre doucement* — place gently), whence comes *liegen* (*coucher* — to lie down *lage* or *laye* (*un lit, comme un lit de pierres* — a bed, as a bed rocks), *Lay-stein* (*pierre à couches, ardoise* — slate), *lego, ich le* (*je remasse ce qu'on a mis* — I collect what has been investe it is the opposite of *mettre* — to place, and then *je lis* — I rea and finally among the Greeks *je parle* — I speak[3]), *La* (*feuille* — leaf), a thing easy to stir, to which are related al *lap, lid,*[4] *lenken, luo,* λύω (*solvo*), *leien*[5] (in Low-Saxon) to d solve, to melt like the snow, whence the Leine has its nam a river of Hanover, which, rising in the mountainous cou tries, is greatly enlarged by the melted snows; not to spea of an infinite number of other similar appellations, which pro that there is something natural in the origin of words whi indicates a relation between things and the sounds and mov ents of the vocal organs; and it is furthermore for that ason that the letter L joined to other nouns makes their minutives with the Latins, the Semi-Latins, and the High ermans. But it must not be pretended that this reason can noticed everywhere, for the lion, the lynx, the wolf, are ything but gentle. But it may be attached to another acci- nt, the speed (*lauf*), which makes them feared or compels ght; as if the one who sees such an animal coming should y to the others: *lauf* (*fuyez!*—fly!); besides by many acci- nts and changes the majority of words are very much tered and diverted from their pronunciation and original gnification.

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[1] *I.e.* "Réverend père." — TR.

[2] *Cf.* Vergil, *Æn.* 8, 91. — TR

[3] Erdmann and Jacques omit: "Et puis je lis et enfin chez les Grecs parle," the reading of Gerhardt. — TR.

[4] Gerhardt's reading; Erdmann and Jacques have "liel." — TR.

[5] Gerhardt's reading; Erdmann and Jacques have "lien." — TR.

Ph. Yet an example would make it better understood.

Th. Here is one plain enough and which comprehends many hers. The word *œil* (eye) and its parentage may serve us. show it I will begin a little further back. *A* (the first tter) followed by a little aspiration makes *Ah*, and as this an emission of the air which produces a sound clear enough its beginning and then vanishing, this sound naturally sig- fies a light breath (*spiritus lenis*) when *A* and *H* are not ry strong. Thence it is that *ἄω*, *aer*, *aura*, *haugh*, *halare*, *leine*, *ἄτμος*, *Athem*, *Odem* (in German) have had their origin. it as water is also a fluid and makes a noise, it has come seems) that *ah* made rougher by doubling, *i.e.* *aha* or *ahha*, s been taken as water. The Teutons and other Kelts, the tter to indicate the motion, have placed their *W* before th. Thence *wehen*, *Wind*, *vent*, indicate the motion of the , and *waten*, *vadum*, *water*, motion of or in the water. But return to *aha*, it appears to be (as I have said) a kind of ot which means water. The Icelanders, who preserve some- hat of the Scandinavian Teutonic, have lessened the aspira- n of some by saying *aa;* others, who say *Aken* (meaning *x*, *Aquae grani*[1]), have increased it, as do also the Latins in eir *aqua*, and the Germans in certain places, who say *ach* compositions to indicate water, as when *Schwarzach*[2] means ck water, *Biberach* water of the beavers. And instead of *iser* or *Weser* they said *Wiseraha* in the old titles, and *isurach*[2] among the ancient inhabitants, of which the Latins

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[1] *I.e.* Aquis Granum, Aix-la-Chapelle.—Tr.

[2] Gerhardt's reading; Erdmann and Jacques read: "Schwartzach," "iserach."—Tr.

have made *Visurgis*, as from *Iler, Ilerach*, they have mad
Ilargus. From *aqua, aigues, auue* the French have finall
made *eau*, which they pronounce *oo*, in which there no longe
remains anything of its origin. *Auwe, Auge* with the Ger
mans is to-day a place which water often overflows, suitabl
for pasturage, *locus irriguus, pascuus;* but more particularl
it signifies an island, as in the name of the monastery o
Reichenau (*Augia dives*), and many others. And this (process
must have gone on among many of the Teutonic and Kelti
peoples, for thence it has come that everything which is, a
it were, isolated in a kind of plain has been called *Auge*
Ouge, oculus. Thus it is they name spots of oil upon wate
among the Germans; and among the Spaniards *ojo* is a hol
But *Auge, Ooge, oculus, occhio,* etc., have been applied mo
particularly to the *œil*, as it were, pre-eminently, which mak
this isolated brilliant foramen in the countenance; and doub
less the French *œil* comes from it also, but its origin is n
at all recognizable, unless by the concatenation I have ju
given; and the ὄμμα and ὄψις of the Greeks appear to com
from the same source. *Oe* or *Oeland* is an island among t
inhabitants of the North, and there is some trace of it in t
Hebrew, where אִי, *Ai*, is an island. Bochart[1] believed th
the Phœnicians derived the name which he thinks they ga
to the Ægean Sea, full of islands, from the same sourc
Augere, augmentation, comes also from *Auue* or *Auge, i.e.* fro
the effusion of waters, as *ooken, auken* in old Saxon was
augment; and *Augustus*, when speaking as Emperor, was tra
lated by *Ooker.* The river of Brunswick, which comes fro
the Hartz Mountains, and consequently is much subject
sudden accretions, is called *Ocker*, formerly *Ouacra.* And
mention in passing that the names of rivers, having ordinari

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[1] Samuel Bochart, 1599–1667, an eminent French scholar and Protest
theologian, a distinguished orientalist, and a man of profound eruditi
thoroughly familiar with all the principal oriental languages, includ
Hebrew, Chaldaic, Syriac, and Arabic, and so enthusiastic in linguistic stud
that even when far advanced in years he desired to learn Ethiopic.
favorite study was Phœnician, and though modest and candid he seeks
derive all languages etymologically "from the Hebrew or Phœnician," a p
cedure which led him into many fanciful etymologies. *Cf.* Dutens, *Leib*
opera omnia, Vol. 6, Pt. II., pp. 223, 226. His complete works were publis
under the title, *Sam. Bochart, opera omnia.* Leyden, 1675, 2 vols. fol., 1
1712, 3 vols. fol. Leibnitz prized and often cited them. — Tr.

me from the farthest known antiquity, show best the old nguage and the ancient inhabitants; hence they deserve rticular investigation. And languages in general being the ost ancient monuments of peoples, before writing and the ts, show best the origin of cognations and migrations. ence etymologies much extended would be curious and significant; but it is necessary to unite the languages of many oples, and not to make too many leaps from one nation to other far distant without having good verifications, in which ocess it is especially useful to have intervening peoples as arantees. And in general credence must be given to etymologies only when there is a quantity of concurrent evidence; do differently is to *goropise*.

Ph. To *goropise?* What does that mean?

Th. It means that the strange and often ridiculous etymologies of Goropius Becanus,[1] a learned physician of the sixteenth tury, have passed into a proverb, although otherwise he y not have been excessively wrong in claiming that the rman language, which he calls Cimbric, has as many, yes, re, marks of a primitive character than the Hebrew itself. emember that the late Mr. Clauberg,[2] an excellent philosopher, has published a brief essay upon the sources of the German language which makes one regret the loss of that which he had promised upon this subject. I have mysel published some thoughts upon the subject, besides inducin the late Gerard Meier,[1] a theologian of Bremen, to work upo it, which he did till death interrupted him. I hope, however that the public will yet one day profit from his labors as wel as from the similar labors of Mr. Schilter,[2] a celebrated juris consult at Strasburg, but who also has just died. It is certai at least that the Teutonic language and antiquities enter int the majority of the researches into European origins, customs and antiquities. And I wish that learned men would mak as much of them in the languages of the Wallachians, Bis cayans, Slavonians, Finns, Turks, Persians, Armenians, Geo gians, and others, the better to discover the harmony whic would particularly be of service, as I have just said, in clearin up the origin of nations.]

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[1] John Becan, 1518–1572, a Belgian physician and scholar, whose real name w Van Gorp — Latinized as Goropius Becanus. He practised medicine for e years at Antwerp, but finally gave himself wholly to the study of quity, belles-lettres, and ancient languages. In a public lecture at Liege, ttempted to demonstrate that the language of Adam was the Flemish or onic, a view which he set forth at length in his *Origines Antwerpianæ sive meriorum Becceselana*, etc., Antwerp, 1569, fol.; and, as at that time he idered the Netherlands to be the site of Paradise, to derive language in ral from the Low-German, which he calls the Cimbric, in his paper *nathena*, Bk. II., p. 25 *sq.* *Cf. Joannis Goropii Becani opera hactenus in n non edita; nempe, Hermathena*, etc., Antwerp, 1580, fol. — Tr.

[2] John Clauberg, 1622–1665, a German philosopher of the Cartesian school, first as a commentator merely and afterwards more independently, duced and expounded the philosophy of Descartes in the universities at orn and Duisburg, where he was professor successively of theology and sophy. He wrote a commentary on the *Meditations* of Descartes, and in wn speculations anticipated much of the subsequent development of Cartesianism. In his *De conjunctione animæ et corporis humani scriptum*, he tained that bodily movements are antecedents only and not strictly causes ental action, a view similar to that of Malebranche. He proposed for physics the name Ontosophy or Ontology, a hint which Christian Wolf, 1754, afterwards followed. *Cf.* Erdmann, *Grund. d. Gesch. d. Philos.*, 8, 4, 290, 4, Vol. 2, pp. 33, 187, 3d ed., Berlin, 1878, and English trans. *ad* His *Ontosophia, de cognitione Dei et nostri* appeared at Muhlberg, 1687,

§ 2. *Ph.* [This design is important, but at present it is tim to leave the *matter of words*, and to return to their *form*, *i.e.*

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1 vol., 12mo; and his *Opera philosophica* at Amsterdam, 1691, 2 vols., 4 Leibnitz had a high regard for him, both as a philologist and philosoph and in one expression apparently places him even above Descartes; "Car sius voluit quædam emendare in physicis, displicet tamen audacia et fast nimius conjunctus cum stili obscuritate, confusione, maledicentia. Longe ma mihi probatus Claubergius, discipulus ejus, plenus, perspicuus, brevis, meth icus." *Cf. Otium Hanoveranum*, ed. J. F. Feller, p. 181, Lipsiæ, 1718; Dute *Leibnit. opera omnia*, Vol. 6, Pt. I., p. 311. Leibnitz frequently mentions h and his works, particularly the *Meditationes et collectanea linguæ Teutoni*, Duisburgi, 1663, and the booklet *Ars etymologica Teutonum*; *cf.* Dute, *op. cit.*, Vols. 5, p. 334; 6, Pt. II., pp. 28, 179, 220. In the *Ars etymol. Teut.* Clauberg puts it forth as a fundamental proposition that the German muste explained as an original language. *Cf.* L. Neff., *G. W. Leibniz als Spra- forscher und Etymologe*, Pt. I., p. 16 *sq.*, Heidelberg, 1870. — Tr.

[1] Gerard or Gerhard Meier or Meyer, who was incited by Leibnitz to e study of German philology, and collected an abundance of select materials a *Grammatica Germanica* and *Glossarium Saxonicum*, but was preve from completing the work begun by his early and sudden death; *cf.* Ecc *Collectanea etymologica*, 2 vols., 8vo, Hannoveræ, 1717, Einleitung, p. 52, Dutens, *Leibnit. opera omnia*, Vol. 6, Pt II., p. 145, note. Leibnitz states the *Glossar. Saxon.* was planned and undertaken with his encouragement, that it will contain much erudition; *cf.* Dutens, *op. cit.*, Vols. 5, p. 115; 6, 4 and note. For the correspondence between Meyer and Leibnitz, which exb- its Meyer's method in his etymological work, *cf.* Dutens, *op. cit.*, Vol. 6 II., pp. 145–176. Leibnitz says: "His learning and character are esteeme all" — "Doctrina ejus, et virtus apud omnes in pretio habentur," Dutens *cit.*, Vol. 5, p. 105. — Tr.

[2] *Cf. ante*, p. 295, note 1. — Tr.

e meaning which is common to the different languages.] ow you will agree with me in the first place, sir, that when ne man speaks to another it is of his own ideas that he wishes give signs; the words cannot be applied by him to things hich he does not know. And until a man has ideas of his wn he cannot suppose them to correspond to the qualities of ings or to the conceptions of another.

Th. [It is true, however, that he intends very often to dicate what others think rather than what he himself inks, as happens only too much in the case of the laity, hose faith is implicit. But I admit that he always means mething general, however hollow and destitute of intelli- nce the thought may be; and he takes pains at least to range his words according to the custom of others, content- g himself with the belief that their sense can be apprehended need. Thus he is sometimes only the interpreter (*truche- an*) of thoughts, or the bearer of the word of another, just as letter would be; and indeed this is the case oftener than you ink.]

§ 3. *Ph.* [You are right in adding that he always means mething general, however idiotic it may be.] A child hav- g noticed in what he hears called gold only a brilliant yellow lor, gives the name of gold to this same color which he sees a peacock's tail; others will add great weight, fusibility, alleability.

Th. [I admit it; but often the idea you have of the object which you speak, is still more general than that of this ild, and I doubt not that a blind person can speak pertinently colors and make a speech in praise of the light which he es not know, because he has learned its effects and circum- ances.]

§ 4. *Ph.* Your remark is quite true. Men often apply their oughts more to words than to things, and because they have rned most of these words before becoming acquainted with e ideas which they signify, not only children, but also grown- men often speak like parrots. § 5. But men ordinarily mean indicate their own thoughts, and further they attribute to rds a secret relation to the ideas of another and to things emselves. For if the sounds were attached to another idea the one with whom we are conversing, it would be necessary to speak two languages. It is true that one does not stop too much to examine what the ideas of others are, and our idea is supposed to be that which the common people and the scholars of the country attach to the same word. § 6. This is particularly the case as regards simple ideas and modes; but as regards substances the belief is more particularly that the words signify also the reality of things.

Th. [Substances and modes are equally represented by ideas; and things, as well as ideas, in both cases are indicated by words; thus I see but little difference, save that ideas of substances and of sensible qualities are more fixed. For the rest, it sometimes happens that our ideas and thoughts are the matter of our discourse and constitute the thing itself which we desire to signify, and that reflective notions enter more than we think into those of things. We speak, indeed, sometimes of words in a material way, without in this case being able to substitute with precision in the place of the word its signification or its relation to the ideas or things.

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[1] Leibnitz here points out a source of manifold, far-reaching and influentia errors, especially fatal in philosophy, viz. the hypostasizing of concepts, *i.e* regarding and using universal thought-symbols as substances, a consequenc of the excessive use of abstract terms. To these errors thus arising from th imperfection and abuse of words and their influence on the mind, Franci Bacon, 1561–1626, in his *Nov. Org.* Bk. I., Aphor. 43, 59, 60, gives the nam of *idola fori*, idols of the market-place, and says they are "omnium molestis sima" — "the most troublesome of all." These words are either names merel of non-existent things or of things supposed to exist because of these names or are names obtained by "vicious and unskilful abstraction" — "mala e imperita abstractione" — from a few objects and indiscriminately applied t all other things having the faintest analogy thereto. The best ed. of Bacon' *Works* is that of Ellis, Spedding, and Heath, 2d ed., 7 vols., London: Long mans, 1870–72. The *Nov. Org.*, in Latin, is in Vol. 1, the Eng. trans. in Vol. of this ed. Editions of the *Nov. Org.* (Latin) have been published with Eng notes, and an Eng. trans. in a separate vol., by G. W. Kitchin, Oxford: Cla endon Press, 1855; and with Introd., Notes, etc., by Thos. Fowler, Oxford Clarendon Press, 1878.

For Leibnitz's estimate of Bacon, whose *De Aug. Scient.* he mention among the writings which happily chanced to come into his hands when youth, and with others helped to direct his studies in the right path, whom h enumerates among "the founders of modern philosophy," and whose metho he applied in his reform of the science of language, *cf.* Gerhardt, *Die philo. Schrift. v. G. W. Leibniz*, Vols. 1 : 196; 3 : 7, 16; 4 : 143, Erdmann, *Leibni opera philos.*, p. 61, b; G. 4 : 64, E. 23, a; G. 4 : 105, E. 45, a, also G. 7 : 32 E. 110, b; G. 4 : 337, 343; 7 : 52, 53, E. 91, b, 92; G. 7 : 67; 7 : 495, Duten *Leibnit. opera omnia*, 5 : 368; 6 : 303; G. 7 : 518, E. 421, a. *Cf.* also Joh Nichol, *Bacon*, Vol. 2, pp. 238–239 (Philos. Classics), Edinburgh: Wm. Blacl his occurs not only in speaking as a grammarian, but also in peaking as a lexicographer, in giving the explication of the erm.]

CHAPTER III

OF GENERAL TERMS

§ 1. *Ph.* Although particular things alone exist, the largst number of words are *general terms*, because it is impossible, 2, for each particular thing to have a particular and distinct ame; besides the fact that in such case a prodigious memory ould be necessary, in comparison with which that of certain enerals who could call by name all their soldiers would be othing. The matter indeed becomes infinite, if every animal, very plant, and even every leaf of a plant, every grain, in hort every grain of sand, which might need a name must ave its name. [And how name the parts of things sensibly niform, as water, fire ?] § 3. Besides, these particular names ould be useless, the principal end of language being to xcite in the mind of him who listens to me an idea similar to ine. [Thus the similitude suffices, which is indicated by eneral terms.] § 4. And particular words alone would not erve to extend our knowledge, [nor to make us judge of he future by the past, or of one individual by another.] 5. But as it is often necessary to mention certain individuals, articularly of our species, use is made of *proper names;* which re given also to countries, towns, mountains and other disinctions of place. And horse-jockeys give proper names ven to their horses, as well as Alexander to his Bucephalus, order to be able to distinguish this or that particular horse hen he is out of their sight.

Th. [These remarks are good, and some of them agree ith those I was about to make. But I would add, in accordnce with the observation I have already made, that *proper ames have been ordinarily appellatives*, that is to say, general

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ood & Sons, 1889. For a brief comparison of Leibnitz and Bacon and of eir philosophies, *cf.* J. T. Merz, *Leibniz*, pp. 21, 71 (Blackwood's Philos. lassics), Edinburgh: 1884.—Tr.

in their origin, as Brutus, Cæsar, Augustus, Capito, Lentulus, Piso, Cicero, Elbe, Rhine, Ruhr, Leine, Ocker, Bucephalus, Alps, Brenner or Pyrenees; for you know that the first Brutus had this name from his apparent stupidity, that Cæsar was the name of a child drawn by incision from the womb of his mother, that Augustus was a name of veneration, that Capito is a large head as also Bucephalus, that Lentulus, Piso, and Cicero were names given in the beginning to those who cultivated in particular certain kinds of vegetables. I have already said what the names of these rivers signify, Rhine, Ruhr, Leine, Ocker. And you know that all rivers are still called Elbe in Scandinavia. Finally *Alps* are mountains, covered with snow (with which agrees *album*, white) and Brenner or Pyrenees signifies a lofty pride, for *bren* was high or chief (as Brennus) in Keltic, as also *brinck* with Low-Saxons is pride, and there is a *Brenner* between Germany and Italy as the Pyrenees are between Gaul and Spain. Thus I would venture to say that nearly all words are originally general terms, because it will only rarely happen that an express name will be invented without reason to indicate one such individual. We can say then that the names of individuals were names of a species which was given *par excellence* or otherwise to some individual, as the name *large head* to that one of the whole city who had the largest or who was the most important of the large heads which were known. Thus it is indeed that we give names of genera to the species, *i.e.* that we shall content ourselves with a term more general or more vague to designate more particular species, when we have no concern for their differences. For example, we are contented with the general name, wormwood, although there are so many species of it that one of the Bauhins[1] has filled a book expressly with them.]

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[1] Jean Bauhin, 1541–1613, a Swiss physician and naturalist, who devoted himself chiefly to botany, and with his brother Gaspard, 1560–1624, also a physician and botanist, was born at Basel, whither his father, an eminen French physician, had fled in exile because of his conversion to Protestantism. He studied with the celebrated botanist Fuchs at Tübingen, and afte travelling and collecting plants in the Alps, in France, and in Italy, became in 1570, physician to Duke Ulrich of Würtemberg at Montbeliard, where h remained till his death. The work of his to which Leibnitz here alludes i entitled *De plantis absinthii nomen habentibus.* It appeared at Montbeliard

§ 6. *Ph.* Your reflections upon the origin of *proper names* re very just; but to come to that of *appellative names* or eneral terms, you will doubtless agree, sir, that words ecome general when they are signs of general ideas, and leas become general when separated by abstraction from me, place, or such other circumstances as may *determine* them this or that particular existence.

Th. [I do not deny this use of abstraction, but it is rather ascending from species to genera than from individuals species. For (paradoxical as it may appear) it is impos- ble for us to have the knowledge of individuals, and to otain the means of *determining* exactly the individuality of ything, at least of keeping it by itself; for all the circum- ances may reappear; the smallest differences are to us insen- ble; place or time, far from determining themselves, need emselves to be determined by the things they contain. The ost important factor in the problem is the fact that *individu- ity* includes infinity, and only he who is capable of com- ehending it can have the knowledge of the principle of dividuation of this or that thing. This arises from the fluence (understanding it healthfully) of all things in the iverse upon each other. It is true that this would be e case, if the atoms of Democritus existed, but in that case so there would be no *difference* between two *different* individ- ls of the same form and size.]

§ 7. *Ph.* It is, however, wholly evident that the ideas which ildren frame of persons with whom they converse (to con- e ourselves to this example) are similar to the persons emselves, and particular only. The ideas they have of eir nurse and their mother are very well traced in their nds, and the names *nurse* and *mamma*, which children use, ate only to these persons. Afterwards when time has own them that there are many other beings resembling

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593. His most important work, composed with the assistance of his fellow- ntryman and son-in-law Cherler, and containing descriptions of about 5000 nts with 3577 figures, is the *Historia universalis plantarum nova et absolu- ima*, Yverdun, 1650–1651, 3 vols., fol. An abridgment of this great work published by Chabrée, of Geneva, with the title *Sciagraphia*, 1666, con- ing in one volume all the figures, together with all of importance on the nenclature and number of species in the great work. He was one of the nders of modern botany. — Tr.

their father or mother, they form an idea in which they find that all these particular beings equally share, and they, as others, give it the name of man. § 8. They acquire in the same way names and notions more general; for example, the new idea of animal is not produced by any addition, but only by removing the figure or the particular properties of man, and retaining a body accompanied by life, feeling, and spontaneous movement.

Th. [Very well; but that shows only what I just said; for as the child advances by abstraction from the observation of the idea of man to that of the idea of animal, he has come from the more specific idea observed in his mother or father and in other persons to that of human nature. For in order to discern that he had not the precise idea of the individual, it is sufficient to consider that an ordinary resemblance would deceive him easily and make him take as his mother another woman. You know the story of the false Martin Guerre,[1] who deceived even the wife of the true, and the near relatives, by resemblance united with skill, and embarrassed for a long time the judges, even when the true Martin had arrived.]

§ 9. *Ph.* Thus this whole mystery of genus and species which makes so much noise in the schools, but which outside of them is with reason so little regarded, this whole mystery I say, reduces itself solely to the formation of abstract ideas more or less extended, to which certain names are given.[2]

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[1] *Cf. Essais de Théodicée*, Discours préliminaire, § 42, Gerhardt, 6, 74 Erdmann, 491, b, Jacques, 2, 48. In the sixteenth century, Martin Guerre, gentleman of Gascony, disappeared from home. After a long absence, a ma by the name of Arnaud du Thil suddenly appeared, claiming to be Marti Guerre, and was acknowledged by the wife of Guerre as her husband. Sh had by him two children. Learning, afterwards, that her true husband wa in Flanders, she angrily delivered the impostor into the hands of justice. Th long trial, one of the most celebrated cases of the century, was brought to a end by the sudden and unexpected arrival of the true Martin Guerre, an Du Thil was sentenced to death. For further details, and the sentence in ful *cf.* P. Larousse, *Grand Dict. Universel de XIXe Siècle*, Vol. 8, p. 1603, b, A parallel case in recent times was the Tichborne trial in England. — TR.

[2] The philosophies of Locke and Leibnitz present a sharp contrast on th question of genera and species, and the real existence of the universal. Accor ing to Locke, the question is a wholly empty one, an inheritance from th unprofitable discussions of scholasticism. The general term, the universal, a purely subjective product of the more or less arbitrary activity of man abstraction, and has nothing whatever to do with reality. Leibnitz maintai that the universal is the inner essence of things, and that the formation

Th. [The art of classifying things into genera and species is of no little importance and of much use both to the judgment and the memory. You know how important this is in ootany, not to speak of animals and other substances, and vithout mentioning also beings moral and notional,[1] as some all them. Order largely depends upon it, and many good uthors so write that their entire discourse can be reduced to ivisions and subdivisions, according to a method which has ome relation to genera and species, and is of use not only in etaining things, but also in finding them.[2] And they who ave arranged all sorts of notions under certain titles or preicaments subdivided have done a very useful thing.]

§ 10. *Ph.* In defining words, we avail ourselves of the genus

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eneral terms is not a mere thought-expedient, but a legitimate and proper pprehension of the true and the real. *Cf.* G. Hartenstein, *Locke's Lehre v. d. enschl. Erkenntniss in Vergleichung m. Leibniz's Kritik derselben*, V., p. 52 *sq.*, also in his *Histor. Philos. Abhandl.*, Leipzig, 1870, pp. 162 *sq.* — Tr.

[1] Notional or conceptional beings, *begriffliche Wesen*, *entia rationis*, are ose which, as Schaarschmidt says, "serve to indicate that which without ing in the ordinary sense of the word substantial (first substance in the nguage of Aristotle," *cf. Categor.* 5, 2^a, 11; Wallace, *Outlines of the Philos. Aristotle*, § 10, p. 25; Zeller, *Philos. d. Griech.*, II., 2 [Vol. 4], p. 304 *sq.*, 3d ed., 79; but *cf.* also, *Metaphys.* VII., 7, 1032^b, 2; Wallace, *op. cit.* § 34, p. 67, ller, *op. cit.* II. 2 [Vol. 4], p. 344 *sq.*) "can still lay claim to an ideal reality." r further discussion of the subjects of this and the note next preceding, *New Essays*, Bk. III., chaps. 5, 6, Bk. IV., chaps. 4, 6. — Tr.

[2] *Cf.* Gerhardt, *Leibniz. philos. Schrift.* 7, 67: "Fuere tamen autores non ntemnendi, qui methodum rebus junxere ut Theodorus Zwingerus, Joh. omas Freigius, Barthol. Kechermannus, et diligentissimus Joh. Henr. stedius, cujus Encyclopaedia mihi pro captu illorum temporum laudanda detur." Alsted, 1588–1638, was Professor of Philosophy and Theology at rborn in Nassau, but applied himself chiefly to systemizing the several anches of art and science. His *Encyclopædia*, Herborniæ, 1630, 7 vols., fol., rinted Lugduni, 1649, 4 vols., fol. Leibnitz often mentions it (*cf.* G. 4, 62, E. 22, a, 28, b; Dutens, *Leibnit. opera omnia*, 5, 405, 567), and wrote down ne thoughts — *cogitata quædam* — for its enlargement and improvement; Dutens, 5, 183–185. The classified contents of the work are given in the icle "Encyclopædia," in the *Encyclop. Brit.* 9th ed., Vol. 8, p. 176, b merican Reprint). Schaarschmidt states that the different works of R. clen, as well as those of Alsted, are of the kind alluded to in the text. clen, 1547–1626, was Professor of Philosophy at Marburg, and published a *ricon philosophicum*, Marburg, 1613, 1 vol., 4to, which, though of little lue, enjoyed from its novelty considerable celebrity at the time of its appeare. Leibnitz refers to this work in his third letter to Clarke; *cf.* G. 7, 365, 752, b, J. 2, 426, D. 2, 122. Goclen was the 'discoverer and signalizer' of Inverse, Regressive, or Goclenian Sorites, in comprehension; *cf.* Hamilton, *ts. on Logic*, XIX., p. 273, Amer. ed., and *Goclenii Isagoge in Organum istotelis*, p. 255, Francof. 1598. — Tr.

or the next general term; and this is for the purpose of sparing ourselves the trouble of counting the different simple ideas which this genus signifies, or sometimes perhaps for the purpose of sparing ourselves the disgrace of being unable to make this enumeration. But although the shortest way of defining is by means of *genus* and *difference*, as the logicians say, it may be doubted, in my opinion, whether it is the best; at least it is not the only way. In the definition which states that man is a rational animal (a definition which is perhaps not the most exact, but which serves well enough the present purpose), instead of the word animal you might put its definition. And this shows the little necessity of the rule which requires that *a definition must be composed of genus and difference*,[1] and the little advantage there is in its strict observance. Thus languages are not always made according to the rules of logic, so that the meaning of each term may be exactly and clearly expressed by two others. And those who made this rule have done ill in giving us so few definitions conformable to it.

Th. [I agree with your remarks; it would be advantageous, however, for many reasons, if definitions might consist of two terms: it would without doubt greatly shorten them, and all divisions could be reduced to dichotomies which are the best species of divisions, and are particularly useful for invention, judgment, and memory. I do not, however, think logicians always demand that the genus or the difference be expressed in a single word; for example, the term *regular polygon* may pass as the genus of the square, and in the figure of the circle the genus might be a plane curvilinear figure, and the difference might consist in the fact that all points of the circumference are equally distant from a certain point as centre.[2]

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[1] *Cf.* Aristotle, *Topica*, VI., 4, 141^b, 26: δεῖ μὲν διὰ τοῦ γένους καὶ τῶν διαφορῶ ὁρίζεσθαι τὸν καλῶς ὁριζόμενον, also I., 8, 103^b, 15: ἐπειδὴ ὁ ὁρισμὸς ἐκ γένους καὶ διαφορῶ ἐστίν, and Wallace, *Outlines*, §§ 14, 15, 25; Zeller, *Philos. d. Griech.*, II., [Vol. 4], p. 255. — Tr.

[2] Leibnitz rightly takes exception to Locke's censure of Aristotle's rul regarding definition, given in the preceding note, viz.: that it must consist o the genus and the species-forming difference, remarking that genus and dif ference may very often be interchanged, the possibility of this interchang depending upon the principle on which, or the point of view from which, th classification is made, or upon the closeness with which the genus and th species-forming difference approach each other, it being essential to vali interchange that they be actually alike, or so nearly so that the difference i

For the rest, it is also well to remark that very often the *genus* may be changed into a *difference* and the *difference* into a *genus.* For example, the square is a regular quadrilateral, or rather a four-sided figure that is regular, so that the genus or the difference seems to differ only as the substantive and adjective; as if, instead of saying that man is a rational living being (*animal raisonnable*), language allowed the statement that man is a living rational being (*rational animable*), *i.e.* a rational substance endowed with an animal nature; while genii[1] are rational substances whose nature is not animal or common with the animals. And this interchange of genera and differentia depends upon the variation of the order of the sub-divisions.]

§ 11. *Ph.* It follows from what I have just said, that what s called *general* and universal belongs not to the being (*existence*)[2] of things, but that it is a work of the understanding, § 12, and the essences of each species are only abstract ideas.

Th. [I do not quite see this consequence. For generality consists in the resemblance of separate things among themselves, and this resemblance is a reality.]

§ 13. *Ph.* I was going myself to say to you that these species are founded upon resemblances.

Th. [Why, then, not seek therein also the essence of genera and species?]

§ 14. *Ph.* You will be less surprised to hear me say that these essences are the work of the understanding, if you consider that there are at least complex ideas which in the minds of different persons are often different collections of simple deas, and thus what is *avarice* in the mind of one man is not so in the mind of another.

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practically of no account. *Cf. New Essays*, Bk. III., chap. 3, *ante*, p. 308. Such definitions, while not strictly logical or scientific in the full sense of these erms, but tentative rather, and, as it were, popular, are nevertheless useful, and indeed necessary, in ordinary life and in science, where we must classify o a certain extent for the sake of relative clearness, but where strict logical definition is not essential, or is impossible because of the insufficiency of our knowledge. Logically exhaustive definition, save in the realm of pure thought and in such sciences as the pure mathematics, is possible only to an infinite mind who possesses exhaustive knowledge of all principles and facts involved. Exhaustive knowledge of an individual demands an exhaustive knowledge of all other individuals. *Cf. N. E.*, Bk. III., chap. 3, § 6, Th., *ante*, p. 309. — Tr.

[1] *I.e.* angels and archangels. — Tr.

[2] Locke has: "real existence," *Philos. Wks.*, Vol. 2, p. 14 (Bohn's Ed.). — Tr.

Th. [I admit, sir, that there are few cases in which I have less understood the force of your inferences than here, and this troubles me. If men differ in the name, does it change the things or their resemblances? If one applies the name avarice to one resemblance, and another to another, there will be two different species designated by the same name.]

Ph. In that species of substance which is most familiar to us and with which we are most intimately acquainted, it has many times been doubted whether the offspring brought into the world by a woman was a man,[1] even to discussing whether he should be fed and baptized. This could not be if the abstract idea or the essence, to which the name man belongs, were the work of nature, and not a diverse, uncertain collection of simple ideas which the understanding put together, and to which it attached a name, after having made it general by way of abstraction. So that at bottom each distinct idea, formed by abstraction, is a distinct essence.

Th. [Pardon me for telling you, sir, that your language perplexes me, for I do not see its connection. If we cannot always discern by the outside the internal resemblances, are there less of them in nature? When we doubt whether a monster is a man, we doubt whether it has reason. When we know it has, the theologians will order it to be baptized, and the jurisconsults, to be fed. It is true that we may dispute about the lowest species logically considered, which vary by accidents in one and the same physical species, or species by direct descent (*tribu de génération*),[2] but we do not need to determine these; we may, indeed, vary them infinitely, as is seen in the great variety of oranges, lemons, and citrons, which experts know how to name and distinguish. The same thing was seen in tulips and pinks when these flowers were in fashion. For the rest, the fact that men unite these or those ideas, or even that nature actually unites them or not, makes no difference as regards essences, genera, or species, since the question only concerns possibilities, which are independent of our thought.]

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[1] *Cf.* Locke, *Philos. Works*, Vol. 2, p. 17, and note (Bohn's Ed.).—Tr.

[2] *Cf. New Essays*, Bk. III., chap. 6, § 14, Gerhardt, 5, 288, line 14; Erdmann, 313, a; Jacques, 1, 234. The term "species," in Leibnitz's day, denoted not merely similarity of external form and characteristics, but more essentially the genetic relationship of common descent.—Tr.

§ 15. *Ph.* The species of each thing is ordinarily supposed have a real constitution, and it is beyond doubt that some al constitution must exist upon which every collection of mple ideas or qualities co-existing in this thing must depend. ut as it is evident that things are ranked in *sorts* or *species* nder certain names only as they agree with certain abstract eas to which we have attached these names, the *essence* of ch genus or species comes thus to be nothing else than the stract idea signified by the general or specific name, and we all find this to be the import of the word essence, according its most ordinary use. It would not be a bad thing, in my inion, to designate these two kinds of essences by two fferent names, and to call the one *real*, and the other, *nominal* *sence.*

Th. [It seems to me that our language makes extreme innotions in the method of expression. We have indeed spoken therto of nominal and causal or real definitions, but not ithin my knowledge of essences other than real, at least by minal essences have not been understood false and imposble essences, which appear to be essences, but are not; as, r example, would be that of a regular decahedron, *i.e.* of a gular body comprised within ten planes.[1] Essence is at ttom nothing less than the possibility of that which we ink. What we assume as possible is expressed by the defition; but this definition is only nominal when it does not press at the same time, possibility; for then we may doubt hether this definition expresses anything real, *i.e.* possible, til experience comes to our aid to make us know this reality *posteriori*,[2] when the thing is actually found in the world: d this suffices for the defect of the reason, which made us ow the reality *a priori*[2] by exposing the cause or the possible neration of the definite thing. It does not then depend on to unite ideas as seems good to us; at least, this combination not justified either by reason which shows it as possible, or experience which shows it as actual, and consequently, also ssible. In order the better to distinguish, also, essence and definition, you must consider that there is only one essence of the thing, but that there are many definitions which express one and the same essence, as the same structure or the same city may be represented by different scenographies according to the different sides from which it is regarded.]

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[1] This figure is impossible, the only possible regular polyhedrons being tetrahedron, hexahedron, octohedron, dodecahedron, and icosahedron.—t.

[2] *Cf. ante*, p. 227, note 2.—Tr.

§ 18.[1] *Ph.* You will, I think, agree with me that the real and the nominal are always the same in simple ideas and in the ideas of the modes; but in the ideas of substances, they are always entirely different. A figure which bounds a space by three lines is the real as well as the nominal essence of the triangle; for it is not only the abstract idea to which the general name is annexed, but the essence or proper being of the thing, or the foundation whence proceed its properties, and to which they are annexed. But it is wholly otherwise as regards gold. The real constitution of its parts, upon which its color, weight, fusibility, firmness, etc., depend, is unknown to us; and, having no idea of it, we have no name that is its sign. Yet these are the qualities which cause the matter to be called gold, and are its nominal essence, *i.e.* which give it a right to the name.

Th. [I should prefer to say, in accord with received usage that the essence of gold is that which constitutes it and whic gives it these sensible qualities, which make it known an which make its *nominal definition*, while we should have th *real and causal definition* if we could explain this contextur or internal constitution. But the nominal definition is her found real also, not by itself (for it does not make know *a priori* the possibility or the genesis of bodies), but by experience, because we have experience of a body in which thes qualities are found together: but without this we might doub whether so much weight would be compatible with so muc malleability, as it may be doubted, even at present, whether glass malleable by cold is possible in nature.[2] I am not, fo the rest, of your opinion, sir, that there is here the differenc etween the ideas of substances and the ideas of predicates, as the definitions of predicates (*i.e.* of the modes and the bjects of simple ideas) were always real and nominal at ıe same time, and that those of substances were only nominal. quite agree that it is more difficult to have real definitions f bodies, which are substantial existences because their conıxture is less sensible. But it is not the same with all subances; for we have a knowledge of true substances or unities ıs God and the soul) as intimate as we have of the most of ıe modes. Besides, there are some predicates as little known the contexture of bodies; yellow or bitter, for example, e objects of simple ideas or notions (*phantasies*[1]), and yet we ıve only a confused knowledge of them.[2] The case is the ıme in mathematics, where one and the same mode may have nominal as well as a real definition. Few people have early explained in what consists the difference between these vo definitions which must distinguish, also, essence and propty. In my opinion, this difference is that the real shows ıe possibility of the thing defined, and the nominal does not.[3]

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[1] § 18, in Locke, *Philos. Works*, 2, p. 19 (Bohn's ed.); so Gerhardt: Erdman Jacques, and Schaarschmidt in his German translation, have § 19. — Tr.

[2] *Cf.* Pliny the Elder, 23–79, *Histor. Natur.*, Bk. 36, chap. 66; Eng. tran (Bohn's Class. Lib.), Vol. 6, p. 381, London, 1857. "In the reign of Tiberiu it is said, a combination was devised which produced a flexible glass. . . . Th story, however, was, for a long time, more widely spread than well authent cated" — "fama crebrior quam certior." — Tr.

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[1] Schaarschmidt translates: "die Gegenstände einfacher Vorstellungen oder ıantasiebilder." — Tʀ.

[2] *Cf. New Essays*, Preface, *ante*, p. 48, *ad fin*, and Bk. IV., chap. 6, § 7, Th.), *infra*, p. 458. According to Leibnitz, sense-knowledge is confused, and needs be developed into clearness and consistency by the discriminative analysis d unifying power of thought. Phenomena such as colors, sounds, etc., the bjective counterpart or resultant of specific sense-energies, resist all further alysis, and while clear as wholes, are composite, insoluble, and so confused regards their single elements. Such wholes admit only descriptive, not, ictly speaking, logical definition. *Cf. Med. de Cog., Ver., et Id. ad init.*, rhardt, 4. 422, Erdmann, 78, a, trans. Duncan, *Philos. Works of Leibnitz*, 27. Tʀ.

[3] *Cf. ante*, pp. 17, 201, and *Med. de Cog., Ver., et Id.*, Gerhardt, 4, 424, dmann, 80, b, trans. Duncan, *Philos. Works of Leibnitz*, 30; also G. 6, , E. 637, a, Dutens, *Leibnit. opera omnia*, 1, 439; 6, 44; G. 7. 194 and note. the nominal definition explains a thing according to the name, we may have minal definitions of objectively non-existent or of impossible things, as ıtaurs, griffins, or any of the creatures of the fancy or the imagination, or decahedron mentioned in § 15, Th., of this chapter, *ante* p. 315. The real finition explains the thing to be defined by exhibiting its cause or generation, rise out of its conditions, *i.e.*, its possibility; it is thus identical with the netic definition, and Leibnitz accordingly calls it the causal definition, *ante* 316. *Cf.* also Dewey, *Leibniz's New Essays*, 210; Hamilton, *Logic*, 343; endelenburg, *Ueber d. Element d. Definition in Leibniz. Philosophie* in *stor. Beitr. z. Philos.*, Berlin, 1867, Vol. 3, pp. 48–62. Trendelenburg calls ecial attention to the fact that Leibnitz, in *definition*, has in mind especially analytical element, explaining definition as an unfolding of the concept,

The definition of two *parallel straight lines*, which states that they are in one and the same plane and will not meet although continued to infinity, is only nominal, for we could at once doubt whether that is possible. But when we have understood that we can draw a straight line in a plane parallel to a given straight line provided we take care that the point of the style describing the parallel remains always equally distant from the given line, we see at once that the thing is possible, and why they have this property of never meeting, which constitutes their nominal definition, but which is the sign of the parallelism only when the two lines are straight, while if one at least were curved, they might be by nature unable ever to meet, and yet not on that account be parallel.

§ 19. *Ph.* If essence was something else than the abstract idea it would not be ingenerable[1] and incorruptible. A unicorn, a mermaid, a perfect circle, perhaps do not exist in the world.

Th. [I have already told you, sir, that essences are perpetual because here the question concerns only the possible.]

CHAPTER IV

OF THE NAMES OF SIMPLE IDEAS

§ 2. *Ph.* I confess I have always believed that the forma tion of the modes was arbitrary; but as regards simple idea and those of substances, I have been persuaded that, beside possibility, these ideas should signify a real existence.

Th. [I see no necessity for it. God has ideas before creatin the objects of these ideas, and nothing prevents Him fro being able also to communicate such ideas to intelligent crea ures: there is also no exact demonstration proving that th objects of our senses and of the simple ideas which the sens

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or its resolution into several concepts equivalent to the one concept — "defini est explicare notionem, resolvere in plures notiones uni aequivalentes;" (Dutens, *op. cit.*, 4, 68: "definitio nihil aliud, quam accurata nominis explicat est"; G. 4, 140, E. 60, b: "definitio enim nihil aliud est, quam significat verbis expressa, sive brevius, significatio significata." — Tr.

[1] Locke's word, *Philos. Works*, Vol. 2, p. 20 (Bohn's ed.). — Tr.

resent to us are outside us.[1] This fact has especial weight n the case of those who believe with the Cartesians and with ur distinguished author, that our simple ideas of sensible ualities have no resemblance to that which is outside us in he objects; there would then be nothing requiring these ideas o be grounded in any real existence.[2]]

§§ 4, 5, 6, 7. *Ph.* You will grant me at least this other ifference between simple and complex ideas, that the names f *simple ideas* cannot be defined, while those of complex ideas an be. For definitions should contain more than one term, ach of which signifies one idea. Thus you see what can or annot be defined, and why definitions cannot go on to infinity; remark which no one, so far as I know, has up to this time ade.

Th. [I have also made the statement in the brief *Essay pon Ideas*,[3] inserted in the "Actes de Leipzic" about twenty ears since, that simple terms cannot have nominal definitions; ut I have there added at the same time the statement that rms, when they are simple only as regards us (because we ave no means of analyzing them so as to reach the elementary perceptions of which they are composed), as heat, cold, yellow, green, can receive a real definition which would explain their cause. Thus, the real definition of *green* is that of an entity composed of blue and yellow thoroughly mixed,[1] although green is no more susceptible of a nominal definition by which we may recognize it than blue or yellow. Terms on the other hand which are simple in themselves, *i.e.* whose conception is clear and distinct, cannot receive any definition, whether nominal or real. You will find in *this little Essay*, placed in the "Actes de Leipzic," the foundations of a large part of the doctrine concerning the understanding, briefly explained.]

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[1] The demonstrability of the reality of that which lies at the basis of the enomena of the senses is one of the most difficult problems in the theory of nowledge — *Erkenntnisslehre.* Leibnitz seems nowhere to have discussed the estion, at least in this form, nor to have asked himself how, agreeably to s philosophical system, a knowledge of the reality of the external world uld be demonstrated or a belief therein justified. So far as his system sugsts any answer consistent with itself, that answer is found in his doctrine of e-established harmony, in the consciousness of which we pass immediately om our inner representative world of ideas to belief in the reality of the ternal things thus ideally represented. This, however, like Descartes' tempt to bridge the chasm from the subjective to the objective by his doctrine God's veracity, is mere assumption, not "exact demonstration." The oblem belongs to both psychology and metaphysics, and is satisfactorily scussed and solved only when considered in these two aspects. Leibnitz was idealist in psychology, and a realist in metaphysics, and never really haronized or united these two points of view. For him, therefore, there could "no exact demonstration" of the external reality of "the objects of our nses and of the simple ideas which the senses present to us." *Cf. Discours Metaphysique*, §§ 26 *sq.*, Gerhardt, *Leibniz. philos. Schrift.*, 4. 451 *sq.*, E. ird, *The Crit. Philos. of Immanuel Kant*, 1, 86–95. New York, Macmillan Co., 1889. — Tr.

[2] *Cf. New Essays*, Bk. II., chap. 8, §§ 21, 24, *ante*, pp. 133–135; also Bk. IV., ap. 11. The constancy of sense-phenomena is the constraining reason for ferring them to something real. *Cf.* Dewey, *Leibniz's New Essays*, 173 *sq.*; rhardt, *Leibniz. philos. Schrift.* 7, 319 *sq.* — Tr.

[3] *Cf. ante*, p. 14, note 2; p. 227, note 3. — Tr.

§§ 7, 8. *Ph.* It were well to explain this point and to indicate what can be defined, what not. And I am tempted to believe that often great disputes are raised and much nonsense introduced into men's discourse from a failure to consider this matter. These celebrated trifles about which so much stir is made in the schools have arisen from the fact that no attention has been paid to this difference which is found in ideas. The greatest masters in the art have been constrained to leave the majority of simple ideas without defining them, and when they have undertaken to define them, they have not succeeded. What more superfine nonsense, for example, could the mind of man invent than that which is contained in this definition of Aristotle: *Motion is the realization of that which is possible so far as it is possible?*[2] § 9. And the moderns who define motion as passage from one place into another, merely put one synonymous word in the place of another.

Th. [I have already remarked in one of our past conferences that you consider many ideas as simple which are not so. *Motion* is of this number which I believe to be definable; and the definition which states that it is a change of place is no to be despised. Aristotle's definition is not so absurd as you think, this supposed absurdity arising from the failure to understand that the Greek κίνησις with him did not signify what we call *motion*, but what we would express by the word *change*, whence it comes that he gives it a definition so abstract and metaphysical, while what we call motion is called by him *φορά*, *latio*, and is found among the species of change (τῆς κινήσεως[1]).]

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[1] This is true of pigments, but not of lights. Blue and yellow lights whe mixed produce white light. — Tr.

[2] *Cf. New Essays*, Bk. II., chap. 21, § 1, Th. *ante*, p. 174. For Aristotle' definition, *cf. Phys. Acroas.*, III., 1, 201b, 4: ἡ τοῦ δυνατοῦ, ᾗ δυνατόν, ἐντελέχει φανερὸν ὅτι κίνησίς ἐστιν, 201a, 11: ἡ τῷ δυνάμει ὄντος ἐντελέχεια, ᾗ τοιοῦτον, κίνησ ἐστιν, *Metaphys.* K, 9, 1065b, 16: τὴν τοῦ δυνάμει ᾗ τοιοῦτόν ἐστιν ἐνέργιαν λέγ κίνησιν, 23: ἡ δὴ τοῦ δυνάμει ὄντος, ὅταν ἐντελεχείᾳ ὂν ἐνεργῇ ἢ αὐτὸ ἢ ἄλλο ᾗ κινητό κίνησίς ἐστιν, also 33; Wallace, *Outlines of the Philos. of Aristotle*, § 42, p. 77 Zeller, *Philos. d. Griec.*, 3d ed., 1879, II., 2 [Vol. 4], p. 350 *sq.*, with the notes -- Tr.

§ 10. *Ph.* But you will not apologize, at least, for the same author's definition of *light* as the action of the transparent.[2]

Th. [I find it, as you do, very useless;[3] and he makes too frequent use of his *action*, which does not tell us much. *Diaphanous* is for him a medium across which we can see; and light is, according to him, that which consists in the actual passage. Well and good.]

§ 11. *Ph.* We agree, then, that our simple ideas cannot have nominal definitions, as we cannot know the taste of pineapples by the accounts of travellers, unless able to taste things by the ears, as Sancho Panza had the power to see Dulcinea by hearsay,[4] or as that blind man who, having been heard to speak boldly of the brilliancy of scarlet, thought it must resemble the sound of the trumpet.

Th. [You are right; and all the travellers in the world could not give by their words what we owe to a gentleman of this country who cultivates successfully pine-apples three leagues from Hannover, almost upon the bank of the Weser, and who has found means of multiplying them to such an extent that some day we can perhaps have them of our own growing in as great abundance as the oranges of Portugal, though there would apparently be some loss in the flavor.]

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[1] *Cf. Phys. Acroas.*, VII. 2, 243^{a}, 6 *sq.*: ἐπεὶ δὲ τρεῖς εἰσὶ κινήσεις, ἥ τε κατὰ τόπον καὶ κατὰ τὸ ποιὸν καὶ κατὰ τὸ ποσόν, ἀνάγκη καὶ τὰ κινούμενα τρία. ἡ μὲν οὖν κατὰ τόπον φορά, ἡ δὲ κατὰ τὸ ποιὸν ἀλλοίωσις, ἡ δὲ κατὰ τὸ ποσὸν αὔξησις καὶ φθίσις, *Eth. Nic.* X., 3, 1174^{a}, 30: εἰ γάρ ἐστιν ἡ φορὰ κίνησις πόθεν ποῖ (Alex. Grant, *The Ethics of Aristotle*, Vol. 2, p. 324, line 17, 3d ed., London: Longmans, Green, & Co., 874); Wallace, *Outlines*, § 42; Zeller, *Philos. d. Griec.*, 3d ed., 1879, II., 2 [Vol. 4], p. 389 *sq.* — Tr.

[2] *Cf. De Anima*, II., 7, 418^{b}, 9: φῶς δέ ἐστιν ἡ τούτου ἐνέργεια τοῦ διαφανοῦς ᾗ ιαφανές, 419^{a}, 11: ἡ δ' ἐντελέχεια τοῦ διαφανοῦς φῶς ἐστίν. E. Wallace, *Aristotle's Psychology in Greek and English w. Introd. and Notes*, Cambridge: Univ. Press, 1882, pp. 95, 97, translates the two passages: "Light then is the expression of the pellucid *qua* pellucid," "The full play of this pellucid constitutes ight," and, in his Introd., p. lxxi., combines them thus: "Light therefore may tself be defined as the actual expression or full play of the pellucid as pellucid." *Cf.* also Zeller, *Philos. d. Griec.*, 3d ed., 1879, II., 2 [Vol. 4], p. 477, note 2.

[3] Schaarschmidt calls attention to "a bad typographical error" in the text f Raspe's edition of the *Nouveaux Essais* at this point. Raspe reads "fort tile," for which Schaarschmidt proposes "futile." Gerhardt, Erdmann, and acques all read "fort inutile," which gives the requisite sense, and is accord-ngly followed in the translation. — Tr.

[4] *Cf.* Cervantes, 1547–1616, *Don Quixote*, Pt. 2, chap. 9, *ad med.*; also, Pt. 1, hap. 31. — Tr.

§§ 12, 13. *Ph.* It is wholly otherwise with complex ideas. A blind man can understand what a statue is; and a man who had never seen the rainbow could understand what it is, provided he had seen the colors which compose it. § 15. But though simple ideas are inexplicable, they are the least doubtful. [For experience accomplishes more than definition.]

Th. [There is, however, some difficulty as to the ideas which are only simple as regards us. For example, it would be difficult to indicate precisely the limits of blue and of green, and in general to discriminate colors closely approaching one another, while we can have precise notions of the terms used in arithmetic and geometry.]

§ 16. *Ph.* Simple ideas have further this peculiarity that they have very little subordination in what the logicians call the *line of predication* (*ligne prédicamentale*),[1] from the lowest ecies to the highest genus. The reason is that the lowest ecies being only a simple idea, nothing can be taken from ; for example, nothing can be taken from the ideas of white d red in order to retain the common appearance in which ey agree. For this reason, they are included with yellow d others, under the genus or the name, *color*. And when en wish to frame a still more general term, comprising, also, unds, tastes, and tangible qualities, they avail themselves of e general term, *quality*, in the sense ordinarily given it to stinguish these qualities of extension, number, motion, pleas- e, and pain, which act upon the mind and introduce into it eir ideas by more than one sense.

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[1] Leibnitz here refers to the *Tabula logica*, in which Porphyry, 233–304, and after him the Scholastic logicians, such as Lambert of Auxerre, c. 1250, Petrus Hispanus, c. 1226–1277, Raimund Lulli, 1234-1315, the Pseudo-Thomas, and Johannes Majoris Scotus, 1478–1540, sought, in connection with the five predicables, to arrange in strict logical subordination by the process of dichotomic or bifurcate division, all genera and species from the highest genera to the lowest species, between which is found the scale of subordinate notions which are at the same time both genus and species. This *Tabula logica* was called by the later commentators, who added the diagram illustrating it, not found in Porphyry, the *arbor Porphyriana* or the *arbor praedicamentalis*, and the line of subordination from the highest genus to the lowest species was called the *linea praedicamentalis* or *praedicabilis*, or the *ordo praedicamentalis*. *Cf.* Porphyry, Εἰσαγωγή chap. 2, 1 b. 40 *sq.* (in Aristotle, ed. Berl. Acad., Vol. 4, p. 1); Ἐξήγησις, f. 18 b., Paris, 1543, 4to; Prantl, *Gesch. d. Logik im Abendlande*, Leipzig, 1855–1870, Vol. 1, pp. 627–8, note 41, 633–4, note 67, Vol. 3, pp. 28, note 14: "Praedicamentum autem nihil aliud est, quam ordinatio praedicabilium in linea praedicabile secundum sub et supra et a latere et in linea recta, . . . unde illa tota ordinatio, quae est inter genus generalissimum et speciem specialissimam et genera subalterna et differentias collaterales, vocatur unum praedicamentum, sicut patet in arbore Porphyrii in tractatu Praedicabilium." (Lambert of Auxerre, *Summa logicae*, Paris, MS., *Cod. Sorbonn.* 1797), 46, note 168, 151, note 42, 252, note 315, *cf.* n. 311, Vol. 4, p. 249, note 434; also, Jevons, *Elementary Lessons in Logic*, p. 103 *sq.* — TR.

Th. [I have something more to say upon this remark. I ope that here and elsewhere you will do me the justice, sir, believe that this is not from a spirit of contradiction, d that the subject seems to demand it. It is not an advan- ge that the ideas of sensible qualities have so little subordina- on and are capable of so few subdivisions; for it arises only om the fact that we know little of them. But the fact itself at all colors have the common property of being seen by e eyes, of all passing into bodies from which one or more them reappear, and of being reflected from the polished rfaces of bodies which do not allow them to pass, shows us at something can be taken from the ideas we have of them. olors may indeed be divided with good reason into *extremes* ne of which is *positive*, viz. white; and the other *privative*, z. black); and into *means*, which are called *colors*,[1] however, a particular sense, and which spring from light by refrac- on; which furthermore may be subdivided into those of the nvex side, and those of the concave side of the broken ray. nd these divisions and subdivisions are of not a little conse- ence.]

Ph. But how can you find genera in simple ideas?

Th. [As they are simple only in appearance, they are companied by circumstances which are bound up with them, although this bond is not understood by us, and these circumstances furnish somewhat that is explicable and susceptible of analysis, which gives also some hope that hereafter the reasons of these phenomena may be discovered. Thus it happens that there is a kind of *pleonasm* in our perceptions of sensible qualities, as well as sensible masses; and this pleonasm is, that we have more than one notion of the same subject. Gold may be defined nominally in several ways; you may say that it is the heaviest of our bodies, that it is the most malleable, that it is a fusible body which resists the cupel and aqua fortis, etc. Each of these marks is good and is sufficient for the recognition of gold, at least provisionally and in the present state of our bodies, until a heavier body is found, as some chemists maintain is the case in their philosopher's stone, or until that *Luna fixa*[1] is shown, which is a metal said to have the color of silver, and almost all the other qualities of gold, and which Chevalier Boyle[2] seems to say he has produced. Thus you may say that in matters which we know only empirically, all our definitions are merely provisional, as I believe I have already remarked above. It is then true that we do not know demonstratively whether a color may not posbly be produced by reflection alone without refraction, and hether the colors we have hitherto noticed in the concavity f the angle of ordinary refraction are not found in the con- exity of a kind of refraction hitherto unknown, and *vice versa.* hus the simple idea of blue would be stripped of the genus hich we have assigned it in our experiences. But it is well stop at the blue we have and at the circumstances attending . And it is something that they furnish us the means of aking genera and species.]

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[1] Gerhardt reads: "et en moyens qu'on appelle encor couleurs dans un ns particulier et qui naissent de la lumiere par la refraction; qu'on peut cor," etc.; Erdmann and Jacques read: "et en moyens qu'on appelle encore s-diviser," etc.; *i.e.* and into means which you are further called upon to bdivide, etc. — Tr.

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[1] *Cf. Fratris Basilii Valentini Benedictiner Ordens Chymische Schrift.*, Hamburg, 1700, Pt. I., p. 272: "Wenn das Gold seiner *Anima* auch verlustig wird / giebt es ein weiss *Corpus* und einen fixen weissen Gold-Leib / der von den suchenden Studenten / und von den Jüngern der Kunst eine *Luna fixa* getaufft und genannt wird;" Pt. II., p. 381, Schluss-Reden Fr. Basilii Valentini, Tract. 1, Sectio iii., De Magneta vulgi, § 3: "Mit dem Magnet und Antimonio wird auch eine *Luna fixa* gemacht / welche alsdann durch das *Oleum Martis & Veneris gradirt* [*sic*], und zu Gold gemacht wird: Jedoch kan mans mit Antimonio und Eisen auch verrichten." Martin Ruland, *Lexicon alchemiæ*, Francofurti, 1612, p. 308: "Luna compacta est argentum fixum vel aurum album: Silber fix oder weiss Gold." Robert Boyle, *Works*, ed. Birch, 5 vols., fol.: London, 1744, Vol. 1, p. 215; 2d ed., 6 vols., 4to: London, 1772, Vol. 1, p. 335, Vol. 3, p. 28. — Tr.

[2] Robert Boyle, 1627–1691, a distinguished natural philosopher and chemist, the discoverer of the law of the compressibility of gases, which, confirmed by its independent discovery by Mariotte in 1676, has since been known as "Boyle and Mariotte's Law." He was one of the founders of the Royal Society of London, and by his will established the "Boyle Lectures." Leibnitz often refers to him, *cf. New Essays*, Preface, *ante*, p. 47. — The title of Boyle's work there referred to is, *Of Absolute Rest in Bodies*, *Works*, ed., Birch, 6 vols., 4to, London, 1772, Vol. 1, pp. 443–457, in which he opposes the doctrine with convincing reasons; — Bk. IV., chap. 12, § 13, Th., *infra*, p. 526; Gerhardt, *Leibniz philos. Schrift.*, 7, 342; Dutens, *Leibnit op. om.*, 5, 98; 6, 107; Leibnitz's estimate of his experiments, 6, 318; Eulogy, 6, Pt. II., 217. — Tr.

§ 17. *Ph.* But what say you of the remark that has been ade that simple ideas, since they are taken from the existence things, are nowise arbitrary, while those of the mixed modes e wholly so, and those of substances to some extent?

Th. [I believe that the arbitrary quality is found only in e words, and not at all in the ideas. For they express ly possibilities. Thus, if there had never been a parricide, d if all the legislators had been as cautious as Solon in eaking of it, parricide would be a possible crime, and its ea would be real. For ideas are in God from all eternity; d indeed they are in us before we actually think of them, I have shown in our previous conversations.[1] If any one shes to take them as the actual thoughts of men, it is per- itted him to do so, but he will oppose himself without reason the accepted language.

CHAPTER V

OF THE NAMES OF MIXED MODES AND RELATIONS

§§ 2, 3, *seq.* *Ph.* But does not the mind form mixed ideas bringing together simple ideas as suits its purpose, without need of a real model; while simple ideas arise for it without choice, through the real existence of things? Is not the mixed idea often seen before the existing thing?

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[1] *Cf. New Essays*, Preface, *ante*, p. 42, *sq.*, Bk. I., chap. 1, § 1, *sq.*, *ante*, 70, *sq.*, where Leibnitz develops more fully the thought repeated here. bnitz assumes that ideas — the pure truths of reason — exist in man, and ne into consciousness by the self-development of the spirit. These ideas tain in themselves the potential representation of all possible reality, the lization of which is directly proportional to the measure of man's self- elopment. In God this realization is complete, since in his thought all l possibility is always actually represented. — Tr.

Th. If you take the ideas as actual thoughts, you are right. But I do not see that it is necessary to apply your distinction to that which concerns the form itself, or the possibility of these thoughts, and yet this is the question in the ideal world which is distinguished from the existing world. The real existence of beings which are not at all necessary is a matter of fact or of history; but the knowledge of possibilities and necessities (for *necessary* is that the opposite of which is not at all *possible*) constitutes the demonstrative sciences.[1]]

Ph. But is there more connection between the ideas of *killing* and of *man* than between the ideas of killing and of a sheep? Is parricide composed of more connected notions than infanticide? And is it more natural that what the English call *stabbing*, *i.e.*, murder by a thrust, or by striking with the point, which is a greater wrong with them than killing by striking with the edge of the sword, should have deserved a name and an idea which is not accorded, for example, to the act of killing a sheep, or of killing a man by cutting?

Th. [If the question concerns only possibilities, all these ideas are equally natural. Those who have seen sheep killed have had an idea of this act in thought, although they have not deigned to give it their attention.[2] Why, then, limit ourselves to names, when the question concerns ideas themselves, and why occupy ourselves with the worth of the ideas of the mixed modes, when the question concerns these ideas in general?]

§ 8. *Ph.* Men form arbitrarily different kinds of mixed modes, so that words are found in one language for which there are no corresponding words in another. There are no words in other languages corresponding to the word *Versura*[3] d among the Romans, nor to *Corban*,[1] used by the Jews. boldly translate the Latin words *hora*, *pes*, and *libra*, by ır, foot, and pound; but the ideas of the Romans were very erent from ours.

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[1] *Cf. New Essays*, Preface, *ante*, p. 43.—TR.

[2] Erdmann reads: "quoiqu'ils ne lui aient point donné de nom et ne l'aien point daigné de leur attention;" Jacques reads, after "daigné," "honorer," otherwise like Erdmann. The rendering then is: although they have no given it a name, nor have they vouchsafed (to honor—Jacques) it (with) their attention.—TR.

[3] "Versura," literally "a turning round," means, in classical usage, "th borrowing of money to pay a debt," a process which resulted simply in changing one's creditor, not in extinguishing the obligation. *Cf.* Cicero, *Epist*

Th. I see that many things which we discussed when the stion was that of ideas themselves and their kinds, come k now, under cover of the names of these ideas. The tement is true as regards the names and the customs of n, but it changes nothing in the sciences and in the nature things. It is true that he who would write a universal mmar would do well to pass from the essence of languages their existence, and compare the grammars of many languages. In like manner, an author who should write a univer- jurisprudence drawn from reason, would do well to unite h it the parallel laws and customs of peoples, which would of service not only in practical life, but also in his reflecıs, and would give him occasion to consider many points ich would otherwise escape him. But in science itself, rt from its history or existence, it is of no consequence ether people are or are not conformed to the dictates of son.]

9. *Ph.* The doubtful signification of the word *species* makes statement that the species of mixed modes are made by understanding offensive to some people. But I leave it to ers to consider who fixes the limits of each *sort* or *species*, these two words are for me wholly synonymous.

Atticum, 5, 15, 2; Tacitus, *Ann.*, 6, 16. As a proverb, the word means get out of one difficulty by getting into another." *Cf.* Terence, *Phormio*, 15; Lactantius, 2, 8, 24. — Tr.

"Corban," Hebrew קָרְבָּן, N.T. κορβᾶν, *i.e.* δῶρον, originally an offering to of any kind, particularly in fulfilment of a vow. The original use was ourse of time altered by the traditionalists, and the offerer of the gift dicted from using it for himself, or giving it to others. The "corban" ished a ready means to any one who wished to relieve himself from any nvenient obligation, as of assisting his parents in poverty or distress; he dly brought his gift to the temple and offered it to God, saying, "Let it orban," and departed free, as he said, from any further responsibility in matter. It was this utter perversion of the spirit of the law, with its ltant positive wrong-doing, that Christ so severely rebuked. *Cf.* Mark -13; Matt. 15:5, 6; and H. A. W. Meyer, *Krit. Exeg. Kommentar ü. d.* ., 6th ed., Göttingen, 1876 — I., 2 [Vol. 2], p. 104; I., 1 [Vol. 1], p. 333; *th's Dict. of the Bible*, ed. Hackett and Abbot, New York, 1877, Vol. 1, 1. — Tr.

Th. [The nature of things ordinarily fixes the limits o species; for example, of man and beast, of cut and thrust. I admit, however, that there are some notions in which the limi is truly arbitrary; for example, the question of determining foot, for, the straight line being uniform and indefinite, natur indicates therein no limits. There are also essences, vagu and imperfect, into which opinion enters; as when you ask how little hair must be allowed a man in order that he be no bald. This was one of the sophisms of the ancients, when on pressed upon his adversary:

> Dum cadat elusus ratione ruentis acervi.[1]

But the true answer is that nature has not determined thi notion, and that the opinion has its share therein that ther are some persons regarding whom it may be questioned whethe they are bald or not, and that there are some doubtful person who will pass as bald with some and not with others, as yo remarked that a horse which will be considered small i Holland, will pass as a large one in the country of the Gauls There is indeed something of this nature in simple ideas, fo I just observed that the final limits of colors are doubtfu There are also *essences* truly *half-nominal*, in which the nam enters into the definition of the thing; for example, the degre or quality of doctor, chevalier, ambassador, king, is recognize when a person has acquired the recognized right to avail him self of this name. And a foreign minister, however complet his power and however extended his train, will not pass a an *ambassador* unless his letter of credence gives him th name. But these *essences* and *ideas* are *vague, doubtful, arb trary, nominal,* in a sense a little different from those whic you have mentioned.]

§ 10. *Ph.* But it seems that the name often conserves th essences of the mixed modes which you think are not arbitrary for example, without the name *triumph,* we should have bu little idea of what took place among the Romans upon tha occasion.

Th. [I agree that the name serves to call attention to thing and to conserve the memory and the actual knowledge of them t that accomplishes nothing as regards the point in question, r does it render the essences nominal; and I do not underund why you gentlemen absolutely require that the essences emselves should depend upon the choice of names. It would ve been desirable that your distinguished author, instead of sisting upon that, had preferred to enter into a much more tailed account of ideas and of modes, and to have set them order and developed the varieties. I would have followed m on this road with pleasure and with profit. For he would ubtless have given us much light.]

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[1] Horace, *Epist.* 2, 1, 47.—Tr.

§ 12. *Ph.* When we speak of a *horse*, or of *iron*, we regard em as the things which furnish us the original patterns of r ideas; but when we speak of mixed modes or, at least, the most important of these modes, which are *moral entities*, for example, *justice*, *gratitude*, — we consider their original odes as existing in the mind. Therefore we say *the notion* justice, of temperance; but we do not say the notion of a rse, of a stone.

Th. [The patterns of the ideas of the one are as real as ose of the ideas of the other. The qualities of the mind not less real than those of the body. It is true you do t see justice as you see a horse, but you understand it no s, or rather you understand it better; it is no less in acts n directness or obliqueness is in motions, whether you nsider it or not. And to show you that men are of my inion, and men, indeed, the most capable and most experied in human affairs, I have only to avail myself of the thority of the Roman jurisconsults, followed by all others, o call these mixed modes or these moral entities, *things*, l in particular, *incorporeal things*. For servitudes,[1] for exple (like that of the passage through the ground of one's ghbor), are with them *res incorporales*, in which there is a perty which may be acquired by long use, and may be ssessed and reclaimed. As for the word *notion*, many clever ple have considered it as large as that of idea; Latin usage is not opposed thereto, nor do I know whether that of the English or the French is contrary to it.[1]]

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[1] *Cf.* Sandars, *Institutes of Justinian*, Lib. II., Tit. III., p. 118, 8th ed., don: Longmans, Green, & Co., 1888; Poste, *Gaius, Elements of Roman* , Bk. II., 29, 31, pp. 165–6, 3d ed., Oxford, 1890; Mommsen, Digest, Lib. I., 1, Vol. 1, p. 250, Berlin: Weidmann, 1870; Hadley, *Introd. to Roman* , pp. 158–161, 180–196, New York, D. Appleton & Co., 1881. — Tr.

§ 15. *Ph.* It is further to be remarked that men learn the names before the ideas of the mixed modes; the name showing them that this idea deserves to be observed.

Th. [This remark is a good one, although it is true that now-a-days children, with the aid of nomenclators, ordinarily learn the names not only of the modes, but also of substances, before the things, and indeed rather the names of substances than of the modes; for it is a defect in these same nomenclators that they employ *nouns* only, and not *verbs ;* not considering that verbs, although signifying the modes, are more essential in conversation than the majority of nouns, which indicate particular substances.[2]]

CHAPTER VI

OF THE NAMES OF SUBSTANCES

§ 1. *Ph.* The *genera* and *species* of substances, as of othe beings, are only *sorts.* For example, suns are a sort of stars *i.e.* they are fixed stars, for it is not without reason that w think each fixed star would make itself known as a sun t a person placed at a proper distance. § 2. Now that whic limits each sort is its essence. It is known either by it interior structure, or by external indications which make u recognize it and call it by a certain name: and thus it is tha we may recognize the clock of Strasburg either as the clock maker who made it, or as a spectator who sees its effects.

Th. [If this is your statement, I have nothing to oppos to it.]

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[1] *Cf. New Essays,* Bk. II., chap. 22, § 2, Th. *ante*, p. 222; *Discours de Metaphysique*, 1686, § 29, Gerhardt, 4, 452. For the meaning and use of these terms in Latin, *idea, notio, conceptus* or *conceptio ;* in French, *idée, notion, conce tion ;* in German, *Idee, Vorstellung, Begriff ;* in English, *idea, notion, con ception* or *concept,* which varies according to the period in the history c thought in which they are employed, and according to the theory of knowledg implicitly or consciously held by the author using them, *cf.* Krauth-Flemmin *Vocab. of the Philos. Sciences*, ed. of 1877, *sub voc.* — Tr.

[2] "For," as Schaarschmidt says, "the activity is first perceived, and by i means the substance recognized and formulated." — Tr.

Ph. I express myself in a way suited not at all to renew ur discussions. But I add that the essence is related only o *sorts*, and that nothing is essential to *individuals*. An ccident or a disease may change my color or shape; a fever r a fall may take away my reason or memory; apoplexy nay leave me neither feeling, understanding, nor life. If ou ask me if it is essential to me to have reason, I reply: o.

Th. [I think that there is something essential to individuals nd more than you suppose. It is essential to substances to ct, to created substances to suffer, to minds to think, to bodies o have extension and motion. That is, there are some sorts r species to which an individual cannot (naturally at least) ease to belong, when it has once been of their number, whatver revolutions may happen in nature. But there are some orts or species, which are accidental (I admit) to the indiiduals, which may cease to belong to them. Thus you nay cease to be healthy, beautiful, wise, and indeed to be isible and palpable, but you cannot cease to have life and rgans and perception. I have stated sufficiently, above, why t appears to men that life and thought sometimes cease, lthough they cease not to endure and to have their effects.]

§ 8. *Ph.* Many individuals ranked under a common name, onsidered as belonging to one species only, have nevertheless ery different qualities depending upon their real (particular) onstitutions. This is easily observed by all those who exmine natural bodies; and chemists often are convinced of it y sad experience, when they vainly seek in one portion of ntimony, sulphur, and vitriol for the qualities which they ave found in other portions of these minerals.

Th. [No statement has more truth, and I could myself even urnish intelligence concerning it. Books have also been written xpressly *de infido experimentorum chymicorum successu*. But he error consists in taking these bodies as *similar* or uniform, hile they are more mixed than we suppose; for in *dissimilar* odies we are not surprised to remark differences between ndividuals, and physicians do not know how much the temeraments and natural dispositions of human bodies differ. n a word, we shall never find the final logical species, as I ave already remarked above, and two real or complete individuals of one and the same species are never perfectly alike.[1]]

Ph. We do not notice all these differences, because we do not know the little parts, nor consequently the interior structure of things. Thus we do not avail ourselves of them in order to determine the sorts or species of things, and if we wished to do so by means of these essences, or by what the schools call substantial forms, we should be like a blind man who desired to arrange bodies according to colors. § 11. We do not indeed know the essences of spirits, we know not how to form distinct specific ideas of angels, although we well know that there must be many kinds of spirits. Thus it seems that in our ideas we put no difference between God and the spirits by any number of simple ideas, save that we attribute infinity to God.

Th. [There is, however, another difference in my system between God and created spirits, viz. that in my view all created spirits must have bodies, just as our soul has one.[2]]

§ 12. *Ph.* I think at least that there is this analogy between bodies and spirits, that as there is no *gap* in the varieties of the corporeal world, so there will be no less variety in intelligent creatures. Commencing from ourselves and proceeding even to the lowest things, a descent is made by *very small*

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[1] *Cf. New Essays*, Preface, *ante*, p. 51, Bk. II., chap. 27, *ante*, p. 238 *sq.*; *De ipsa natura*, § 13, Gerhardt, 4, 512, Erdmann, 158, b, Jacques, 1, 464 (in French), trans. Duncan, *Philos. Works of Leibnitz*, 122, 123; *Monadologie*, § 9, G. 6, 608, E. 705, J. 2, 392, trans. D. 219, F. H. Hedge, "Jour. Spec. Philos.," 1, 129; 4th letter to Clarke, §§ 4 *sq.*, G. 7, 372, E. 755, b, J. 2, 432, trans. D. 247, 5th letter to Clarke, § 21, G. 7, 393, E. 765, J. 2, 449, trans. D. 258. This is the principle of the identity of indiscernibles, *principium identitatis indiscernibilium* — *i.e.* that "things qualitatively undistinguishable are absolutely identical." According to Leibnitz, there are no such things, there being in the universe no two objects perfectly alike; though abstractly possible, they are inconsistent with the order of things, and with the divine wisdom, which admits nothing therein without reason. *Cf.* also Kant's development and criticism of Leibnitz's principles in his *Dilucidatio nova*, 1755. *Werke*, ed. Rosenkranz & Schubert, Leipzig, 1838–42, Vol. 1, p. 1; ed. Hartenstein, Leipzig, 1867–68, Vol. 1, p. 365, *Krit. d. r. Vernunft, V. d. Amphibolie d. Reflexionsbegriffe*, ed. R. & S. 2, 214, ed. H. 3, 225, 4th ed., J. H. v. Kirchmann, Leipzig, 1877, p. 268 *sq.*, E. Caird, *The Crit. Philos. of Immanuel Kant*, 1, 106 *sq.*, 445 *sq.*, 500 *sq.*, New York, Macmillan & Co., 1889; Ueberweg, *Hist. of Philos.*, 2, 144, 173, Ueberweg-Heinze, *Gesch. d. Philos.*, 7th ed., 3, 215, 259. — Tr.

[2] *Cf. New Essays*, Preface, *ante*, p. 52, Bk. II., chap. 1, § 12, Th. *ante*, p. 113, chap. 15, § 4, Th. *ante*, p. 159, and note. — Tr.

grees, and by a continued series of things, which in each
move differ very little one from the other. There are fishes
at have wings, and to whom the air is not strange, and there
e birds inhabiting the water whose blood is cold like that of
e fishes, and whose flesh so strongly resembles theirs in
ste that the scrupulous are allowed to eat them on fish-
ys. There are animals so closely approaching the species
birds and of beasts that they hold the middle ground between
em. The amphibia contain both terrestrial and aquatic ani-
ls. Seals live upon the land and in the sea; and porpoises
hose name signifies sea-hog) have the warm blood and the
rails of a hog. Not to speak of that which is reported of
-men,[1] there are *some animals* who seem to have as much
owledge and reason as some that are called men; and there
so close a relation between animals and vegetables, that
you take the most imperfect of the one and the most perfect
the other, you will scarcely perceive any considerable dif-
ence between them. Thus, until we reach *the lowest and*
st organized parts of matter, we shall find everywhere species
nd together, and differing only by degrees almost impercept-
e. And when we consider the wisdom and infinite power of
Author of all things, we have reason to think that it is con-
med to the magnificent *harmony of the universe* and to the
at design as well as to the infinite goodness of this sovereign
hitect, that the different species of creatures ascend, also,
le by little from us towards his infinite perfection. Thus
have reason to be persuaded that there are many more
cies of creatures above us than below us, because we are
ch more distant in degrees of perfection from the infinite
ng of God than from that which approaches nearest to
hing. Yet we have no clear and distinct idea of all these
erent species.

h. [I had intended in another place to say something not
ke what you, sir, have just set forth; but I am glad to
e been anticipated when I see that you state things better
n I could hope to have done. Clever philosophers[2] have

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[1] *I.e.* mermaids; so Locke, "mermaids or sea-men," *Philos. Works*, Vol. 2,
(Bohn's ed.). — TR.

[2] *Cf. Théodicée*, Pt. I., § 14, Gerhardt, 6, 110, Erdmann, 507, b, Jacques,
, Dutens, 1, 131 (in Latin); Reply to Bayle, *ad fin.*, G. 4, 570, E. 190, b,

discussed this question: *utrum detur vacuum formarum, i.e.* whether there are possible species, which, however, do not exist, and which nature may seem to have forgotten. I have reason to believe that all possible species are not compossible in the universe, great as it is, and that, too, not only in relation to things which exist contemporaneously, but also in relation to the whole series of things. That is to say, I believe that there are of necessity species which have never existed and never will exist, not being compatible with this series of creatures which God has chosen. But I believe that all things, which the perfect harmony of the universe can receive, exist therein. That there may be intermediate creatures between those which are far apart is in conformity with this same harmony, although this is not always in one and the same globe or system, and that which is between two species is sometimes so in relation to certain circumstances and not in relation to others. Birds, so different from man in othe things, approach him in speech; but if monkeys could speak like parrots, they would go farther. *The law of continuity* declares that nature leaves no gap in the order she follows but every form or species is not the whole order. As fo spirits or genii, as I hold that all created intelligences hav organized bodies, whose perfection corresponds to that of th intelligence, or the mind, which is in this body in virtue o the pre-established harmony, I hold that in order to gain an conception of the perfections of spirits above us, it will be o great service to imagine these perfections also in bodily organ which surpass our own. It is a case in which the livelies

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D. 2, 93: "Il se peut cependant, que ce Chevalier ait encor eu quelque bon e thousiasme, qui l'ait transporté *dans ce monde invisible, et dans cette étend* *infinie*, dont il parle, et que je crois estre celle des idées ou des formes, dont o parlé encor quelques Scholastiques en mettant en question, *utrum det* *vacuum formarum.*" — Tr.

[1] *Cf. New Essays*, Preface, *ante*, p. 50, Bk. IV., chap. 16, § 12, Th., *infr* p. 552; *Théodicée*, III., § 348, Gerhardt, 6, 321, Erdmann, 605, b, Jacques, 270; Letter to Bayle, in the "Nouvelles de la République des Lettres," Jul 1687, G. 3, 52, E. 104, trans. Duncan, *Philos. Works of Leibnitz*, 33; Letter Arnauld, 1690, G. 2, 136, E. 107, b, J. 1, 444, trans. D. 38. *Animadversiones* *partem generalem Principiorum Cartesianorum*, Pt. II., ad Art. 45, G. 4, 3 Duncan, 61; Guhrauer, *G. W. Freiherr v. Leibniz, eine Biographie*, 1, 2 and notes, pp. 31–33, a letter to an unknown person, Oct. 16, 1707, containi a very clear statement of the principle or law of continuity; translatio Appendix, pp. 712–714. — Tr.

ıd richest imagination, and, to avail myself of an Italian rm which I cannot well express otherwise, the *invenzione la ù vaga,* will be most timely in raising us above ourselves. nd what I have said in justification of my system of harmony, hich exalts the divine perfections beyond what we had dared think, will assist us also in having ideas of creatures inmparably grander than we have had hitherto.

§ 14.[1] *Ph.* To return for a little to the reality of species en in substances, I ask you if water and ice are different ecies?

Th. [I, in my turn, ask you if gold melted in the crucible d gold cooled in bullion are of one and the same species?]

Ph. He does not reply to the question, who proposes anher,

> Qui litem lite resolvit.[2]

ıt you thereby admit that the reduction of things to species ates solely to the ideas we have of them, which suffice to stinguish them by names; but if we suppose that this disction is founded upon their real and internal constitution, d that nature distinguishes existing things into so many ecies by their real essences, in the same manner as we rselves distinguish them into species by these or those mes, we shall be liable to great mistakes.

Th. There is some ambiguity in the term *species*, or *a being a different species*, which causes all this confusion; and en we have removed it, there will no longer be discussion e perhaps as regards the name. We may take species thematically and physically. In mathematical strictness least difference making two things in any respect dissimilar, kes them *different in species.* Thus, in geometry, all circles of one and the same species, for they are all perfectly alike, for the same reason all parabolas are also of the same cies; but it is not the same with ellipses and hyperbolas, for these there is an infinite number of sorts or species, as l as an infinite number of each species. All the numberless ellipses, in which the distance of the foci has the same ratio t the distance of the apices, are of one and the same species ; but as the ratios of these distances vary only in size, it follows that all these infinite *species* of ellipses make only one *genus*, and that there are no subdivisions. On the other hand, an oval of three foci would have indeed an infinite number of such *genera*, and would have an infinitely infinite number of *species*, each genus having a number of them simply infinite. In this sense two physical individuals will never be perfectly similar, and what is more, the same individual will pass from species to species, for it is never wholly similar to itself even for more than a moment But the men who establish physical species do not adhere t this strictness, and it depends upon them to say that a mas which they can make return to themselves under its first form continues to be one and the same *species* in their view. Thu we say that water, gold, quicksilver, common salt, continu the same, and are only disguised in ordinary changes ; bu in organized bodies, or in species of plants and of animals, w define species by generation, so that this similarity, whic comes or may have come from one and the same origin o seed, would be of one and the same species.[1] In man, beside human generation, we fasten upon the attribute rational animal and, although there are men who live like beasts all thei lives, we presume that it is not for want of faculty or princip but that it is through impediments which stand in the wa of this faculty. But it is not yet determined as regards a the external conditions which we wish to regard as sufficie to give this presumption. But whatever regulations me make for their denominations and for the rights attached names, provided that their regulation is followed or made fa and intelligible, it will be founded in reality, and they wi not be able to imagine species which nature, which includ even possibilities, has not produced or distinguished befo them. As for the interior, although there is no external a pearance which is not based upon the internal constitution, is nevertheless true that one and the same appearance ma sometimes result from two different constitutions. But

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[1] Locke has § 13, *Philos. Works*, Vol. 2, p. 50. The numbering § 14 in the ıch text of all the editions is an error, as will be seen upon comparing numbering of the next §, also 14, with Locke's text. Here also the texts cide with Locke's. — Tr.

[2] *Cf.* Horace, *Satires*, 2, 3, 103. — Tr.

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[1] *Cf. New Essays*, Bk. III., chap. 3, § 14, Th. (2), *ante*, p. 314 ; Dewey, *Le niz's New Essays*, p. 215 *sq.*—Tr.

at case there will be something in common, and this is what
e philosophers call the *proximate formal cause.* But although
is should not be, as if according to Mariotte[1] the blue of
e rainbow had an entirely different origin from the blue
the turquoise, unless there were a common formal cause (in
ich opinion I do not at all agree with him), and although
should agree that certain apparent natures which make us
e names have nothing internal in common, our definitions
uld not cease to be grounded in real species; for the
enomena themselves are realities. We can say, then, that
which we truthfully distinguish or compare, nature dis-
guishes or makes agree also, although she has distinctions
d comparisons which we do not know and which may per-
ps be better than ours. Thus much care and experience is
t necessary in order to assign genera and species in a manner
ficiently like nature. Modern botanists think that the dis-
ctions taken from the forms of flowers most resemble the
ural order.[2] But they find therein, however, still much
ficulty, and it would be advantageous to make comparisons
l arrangements not only upon a single character, like that
which I have just spoken, which is taken from flowers,
l is perhaps the most suitable up to this time for a possible
tem and convenient for learners, but also upon characters
en from other parts and relationships of plants: each
is of comparison deserving tables of its own;[3] without
ich we shall allow many subaltern genera, and many com-
isons, distinctions, and useful observations to escape. But
more thoroughly we examine the generation of species,
l the more we follow in the classifications the conditions
ich are there requisite, the closer we shall approach the
ural order. Therefore, if the conjecture of some intelligent
sons were found true, that there is in the plant besides the

Cf. ante, p. 121, note 4. — Tr.

Cf. Dutens, *Leibnit. opera omnia*, Vol. 2, Pt. II., p. 169 *sq.*, *Epistola G. G.
nitii ad A. C. Gackenholtzium, M. D. De Methodo Botanica*, April 23,
. — Tr.

Cf. Mor. Wilh. Drobisch, *Neue Darstg. d. Logik*, 3d ed., Leipzig, 1863,
1 *sq.*, where the so-called Collateral Distributions or Co-divisions, which
nitz here calls to mind, and "which are of especial importance in Statis-
" are discussed. Drobisch's work is considered "one of the most perfect
entations of the subject-matter from the point of view of formal logic."
R.

seed (*la graine*) or the recognized seed (*la semence*) correspond ing to the egg of the animal, another seed which would deserv the name masculine, *i.e.* a powder (*pollen*, visible very ofte though sometimes, perhaps, invisible, as the seed (*la grain* itself is in certain plants) which the wind or other ordinar accidents scatter in order to unite it with the seed which come sometimes from one and the same plant, and sometimes, als (as in the hemp), from another neighboring plant of the sam species, which plant consequently will be analogous to th male, though perhaps the female is never wholly destitute this same *pollen;* if this conjecture, I say, were found tru and if the mode of generation of plants became better know I do not doubt that the varieties which would be noticed woul furnish a basis for very natural divisions. And if we had t penetration of some superior geniuses and knew enough abo things, perhaps we should find therein fixed attributes f each species, common to all the individuals and always su sisting in the same living organism, whatever alterations transformations may happen to it, as in the best known of t physical species, the human, reason is such a fixed attribut granted to each individual, and never to be lost, althou it cannot always be perceived. But in default of this know edge we avail ourselves of the attributes which appear to most convenient for distinguishing and comparing things, a in a word, for recognizing in them species or sorts; and the attributes have always their real grounds.]

§ 14. *Ph.* In order to distinguish substantial beings acco ing to the usual supposition, that there are certain essences precise forms of things, whereby all existing individuals naturally distinguished into species, it would be necessary be assured, § 15. *first*, that nature always proposes, in t production of things, to make them participate in cert regular and established essences, as models; and, § 16. *ondly*, that nature always attains this end. But monst give us reason to doubt both. § 17. It would be necess to determine, *in the third place*, whether these monsters really a distinct and new species, for we find that some these monsters have few or none of those qualities which supposed to result from the essence of that species whe they derive their origin, and to which they seem to belong virtue of their birth.

Th. When it is a question of determining whether monsters belong to a certain species, we are often reduced to conjecture. This shows us that we are not, then, limited to external considerations, since we should divine whether the *internal nature* (as, for example, reason in man) common to the individuals of such a species, still suits (as birth makes us conjecture) these individuals, in whom a portion of the *external characteristics*, ordinarily found in this species, is lacking. But our incertitude nowise affects the nature of things, and if there is such a common internal nature, it will or will not be found in the monster, whether we know it or not. And if the internal nature of any species is not found therein, the monster will be of its own species. But if there were no such internal nature in the species under discussion, and if the question was not decided by birth either, then the external marks alone would determine the species, and monsters would not belong to that species from which they deviate, unless taken in a manner a little vague and with some latitude; and in this case, also, our trouble in desiring to divine the species would be in vain. This is perhaps what you mean by all the objections you make to species taken as real internal essences. You ought then to prove, sir, that no common internal specific mark exists, since the external is wholly missing. But the contrary is found in the human species in which sometimes children who have some monstrosity reach an age in which they exhibit reason. Why, then, could there not be something similar in other species? It is true that for want of knowledge of them we cannot avail ourselves of it to define them, but the exterior takes its place, although we recognize the fact that it is insufficient for an exact *definition*, and that the *nominal definitions* themselves in these instances are only conjectural; and I have already stated above how sometimes they are only *provisional.* For example, we might find a way to counterfeit gold so that it might satisfy all the tests which we have up to the present time; but we might also then discover a new method of testing which would give the means of distinguishing natural gold from this *which is artificially made.* The old journals attribute both (discoveries) to Augustus, Elector of Saxony;[1]

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[1] Augustus I., the brother of Maurice, was Elector 1553–1586, and, according to Schaarschmidt, "shared with his wife, Anna of Denmark, the love for alchemy." —TR.

but I am not the man to guarantee this fact. But if i were true, we could have a *more perfect definition* of gol than we have at present, and if *artificial gold* could be mad in quantity and cheap, as the alchemists claim, this *new proo* would be important; for by its means we could preserve fo the human race the advantage which *natural gold* gives us i commerce by its rarity, while furnishing ourselves with substance which is durable, uniform, easy to divide and t recognize, and precious in small volume. I wish to avai myself of this occasion to remove a difficulty (see § 50 of th chapter, "On the Names of Substances," in the author o the *Essay on Understanding*). The objection is made that i saying: All gold is fixed, if we understand by the idea of gol the mass of certain qualities in which fixedness is comprised we make only an identical and useless proposition, as if w said: Fixedness is fixedness; but if we understand thereby substance given a certain internal essence, of which fixednes is a result, we shall not speak intelligibly, for this real essenc is wholly unknown. I reply that the body given this interna constitution is designated by other external marks in whic fixedness is not comprised, as if any one said: the heavies of all bodies is also one of the most fixed. But all that i only provisional, for we might some day find a volatile body as a new mercury, which would be heavier than gold, and upo which gold would float, as lead floats upon our mercury.

§ 19. *Ph.* It is true that in this way we can never kno precisely the number of properties depending on the rea essence of gold unless we know the essence of gold itsel § 21. [But if we limit ourselves precisely to certain propertie that will be sufficient to enable us to have exact nomina definitions which will serve us for the present, reserving t ourselves the privilege of changing the signification of name if any new useful distinction is discovered.] But it is neces sary at least that this definition correspond to the use of th name, and be capable of being put in its place. This serve to refute those who maintain that extension constitutes th essence of body, for when it is said that one body gives a impulse to another, the absurdity would be manifest, if subst tuting extension (for body) we should say that one extensio puts in motion another extension by means of an impulse, f in addition solidity is necessary. In like manner no one will say that reason, or that which makes man rational, makes conversation; for reason does not constitute the entire essence of man; there are rational animals who converse with each other.

Th. I think you are right: for the objects of abstract and incomplete ideas are not sufficient to give the subjects of all the actions of things. But I think that *conversation* agrees with all minds who can interchange their thoughts. The scholastics are greatly troubled regarding the *angelic* method of communication; but if they would accord the angels subtile bodies, as I do, following the ancients, they would experience no further difficulty in that regard.[1]

§ 22. *Ph.* There are some creatures in the world which have forms similar to ours, but are hairy and use neither language nor reason. There are imbeciles[2] among us who have exactly the same form as ourselves, but who are destitute of reason, and some of them make no use of language. There are some creatures, as it is said, which, with the use of language and of reason and a form similar in every other respect to ours, have hairy tails; at least, it is not impossible that there are such creatures.[3] There are others, where the males have no beard, and others, where the females have. If you ask whether all these creatures are men or not, whether they belong to the human species, it is plain that the questio refers only to the nominal definition, or to the complex ide we have made for ourselves in order to indicate it by thi name; for the internal essence is absolutely unknown to us although we have reason to think that where the faculties, o rather the external figure, are so different, the internal constitution is not the same.

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[1] *Cf. New Essays*, Preface, *ante*, p. 52, Bk. III., chap. 6, *ante*, p. 332, note 2; also letters to Des Bosses, Sept. 20, Oct. 4, 1706, Gerhardt, 2, 316, 319, Erdmann, 439, 440. — Tr.

[2] Locke has: "naturals," *Philos. Works*, Vol. 2, p. 53 (Bohn's ed.). — Tr.

[3] The myth of men with tails, here mentioned and accepted as credible by Locke, arose either from the superficial observation of African travellers, or from their uncritical acceptance and rehearsal of the stories of such Negroes as claimed to have seen such beings, assumed by them to be endowed with reason, although covered with hair and furnished with tails — stories which seem to rest upon a confusion of men with man-like apes, a confusion the more naturally suggested as many tribes of negroes regard the apes as rational but uncivilized human beings. The myth has been exploded in our day by the knowledge furnished by scientific explorers into the interior of Africa (the assumed abode of these beings), such as Dr. Georg August Schweinfurth, who states that among the tribes of Central Africa the Dyoor, the Niam-niam, and the Bongo, fasten upon themselves behind, as a part of their dress, the tails of animals, as, for example, that of "the quereza monkey (*Colobus*)," or tails "composed of the bast of the Sanseviera." Cf. his *Im Herzen von Afrika*, English trans. by Ellen E. Frewer, 2 vols., New York: Harper & Bros., 1874, Vol. 1, pp. 201, 294–6, Vol. 2, pp. 2, 6, 11, 137. — Tr.

Th. I think we have in the case of man a definition at onc real and nominal. For nothing can be more internal to ma than reason, and ordinarily it makes itself well known. Therefore the beard and the tail will not be considered in compariso with it. A man of the forest, though hairy, will make himsel recognized; and it is not the hair of a magot[1] which exclude him. Imbeciles lack the use of reason; but as we know b experience that reason is often bound and cannot appear, an as this happens in the case of men who have exhibited an will exhibit reason, we make, probably, the same judgmen regarding these imbeciles upon other indications, *i.e.* upo their bodily figure. It is only by these signs, united wit their birth, that we presume that infants are men, and wil manifest reason; and we are seldom deceived. But if ther were rational animals with an external form a little differen from ours, we should be embarrassed. This shows that ou definitions, when dependent upon the exterior of bodies, ar imperfect and provisional. If any one called himself a angel, and knew, or knew how to do, things much above us, h might be believed. If some one else, like Gonzales,[2] cam from the moon by means of some extraordinary machine, an told us credible things about his native country, he would pas as a lunar being, and yet we might accord him indigineity and the rights of citizenship, with the title of man, entire stranger as he would be to our globe; but if he asked for baptism and wished to be received as a proselyte of our law, I think that we should see great discussions arise among the theologians. And if communication were opened with these planetary men, sufficiently approaching ourselves according to Huygens,[1] the question would require a universal council in order to know whether we ought to extend the care of the propagation of the faith even beyond our globe. Many would doubtless maintain that the rational animals of these countries, not being of the race of Adam, have no part in the redemption of Jesus Christ; but others would perhaps say that we have not sufficient knowledge either of the place where Adam has always been, or of what has been done with all his posterity, since there have been theologians, indeed, who believed that the moon was the place of paradise; and perhaps that with the plurality we should conclude for the surest thing, viz., to baptize these men upon condition that they be susceptible of baptism; but I doubt whether we should ever wish to make them priests in the Roman Church, because their consecration would always be doubtful, and we should expose the people to the danger of a material idolatry, according to the hypothesis of this church. Happily the nature of things exempts us from all these embarrassments; but these bizarre fictions are useful in speculation, in order rightly to know the nature of our ideas.

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[1] The Barbary ape. — TR.

[2] Cf. *L'Homme dans la lune, ou le voyage chimérique fait au monde de lune, nouvellement découvert par Dominique Gonzales, avanturier Espagn autrement dit le courier volant, mis en nostre langue par J. B. D.* (Jean Ba doin), Paris, 1648, 8vo, pp. 176; reprinted Paris, 1666, with illustrations, a also Paris, 1731, 12mo. Brunet states that this is the French translation Franc. Godwin, *The Man in the Moon, or a discourse of a voyage thither Domingo Gonsales*, London, 1638, also 1657, etc., 12mo; that it had some su cess, and that it is supposed that Swift borrowed some passages from it for h *Gulliver's Travels.* Cf. E. A. Poe, *Works*, New York, 1867, Vol. 1, p. 49, wh gives, in a note at the end of the story of "The unparalleled adventure of o Hans Pfaall," the full title of the French book, together with some account its contents, including the machine of Gonzales. — TR.

§ 23. *Ph.* Not only in theological questions, but also on other occasions some would perhaps wish to regulate themselves by the race, and to say that in animals propagation by the copulation of the male and the female, and in plants by means of the seeds, keeps *the supposed real species* distinct and entire. But this would serve only to fix the species of animals and vegetables. What must be done about the rest? And even as regards these it is not sufficient, for if history is to be believed, women have been gotten with children by magots. And here is a new question: Of what species must such a production be? You often see mules and jumarts (see Dictionnaire Étymologique de M. Ménage [1]), the first begotten by an ass and a mare, the last by a bull and a mare. I have seen an animal begotten of a cat and a rat, which had visible marks of these two animals.[2] Whoever will add thereto the monstrous productions, will find that it is very hard to determine species by generation; and if it can only be done by that means, must I go to the Indies to see the father and mother of a tiger, and the seed of the tea-plant, and could I not otherwise decide whether the individuals which come to us are of these species?

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[1] *Cf. ante*, p. 150, note 3. *Leibnizens u. Huyghen's Briefwechseln, v. E. Gerland*, Berlin, 1881. — TR

Th. Generation or race gives at least a strong presumption (*i. e.* a provisional proof) and I have already said that very often our signs are only conjectural. The race has sometimes been contradicted by the figure, as when the child is unlike the father and mother, and the mixture of figures is not always the sign of the mixture of races; for it may happen that a female gives birth to an animal which seems to belong to another species and that the mother's imagination alone has caused this irregularity: to say nothing of what is called *mola*.[3] But as meanwhile we judge provisionally the species by the race, we also judge the race by the species. For when a forest child,[4] taken from among the bears, who had many of their ways, but who made himself known at last as a rational animal, was presented to John Casimir,[5] king of Poland, he did not scruple to believe him of the race of Adam, and to baptize him under the name of Joseph, although perhaps upon the condition, *si baptizatus non es*, according to the usage of the Roman church, because he might have been carried off by a bear after baptism. We have not as yet sufficient knowledge of the effects of the intermixture of animals: and often monsters are destroyed, instead of being brought up, whilst they are seldom long lived. The belief is that mixed animals do not multiply; but Strabo[1] attributes propagation to the mules of Cappadocia, and letters from China tell me that in neighboring Tartary there are race-mules. We see also that the mixtures of plants are capable of preserving their new species.[2] We do not always indeed know in the case of animals whether it is the male or the female, or both, or neither, which determines the species. The doctrine concerning the eggs of females which the late Mr. Kerkring[3] made famous, seemed to reduce the males to the condition of moist air as related to plants, which furnishes seeds with the means of pushing and raising themselves from the earth; following the verses of Vergil which the Priscillianists[4] were wont to repeat:

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[1] *Cf.* Dutens, *Leibnit. op. om.*, 5, 350, 543; 6, Pt. II., 21, Gerhardt, 2, 530 539. Gilles Ménage, 1613–1692. The first ed. was entitled *Origines de la langue françoise*, Paris, 1650, 4to. A new ed. appeared at Paris, 1694, fol., under the name, *Dictionnaire Étymologique de la langue françoise*, etc.; and this was afterwards enlarged and edited by A. F. Jault, Paris, 1750, 2 vols., fol. — TR.

[2] An instance of superficial observation and hasty inference, like that o the men with tails above mentioned, *ante*, p. 341, note 3. — TR.

[3] An amorphous fleshy mass in the uterus. — TR.

[4] Schaarschmidt states that J. H. F. Ulrich, in his German trans., with additions and notes, Halle, 1778–80, of Raspe's *Œuvres philosoph. latines et françaises de feu Mr. Leibniz*, "gives in a note, p. 139–140, information concerning the child of the bears found in the forest, without, however, quoting the source of his communications." — TR.

[5] John II., Casimir V., 1609–1672. He was elected king of Poland in 1614 and abdicated in 1688. — TR.

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[1] *Cf. Geographica*, p. 212, ed. Casaubon, 1620; Bk. V., chap. 1, § 4, ed. by Gustav Kramer, Berlin, 1844–52, 3 vols., 8vo; English trans. Vol. 1, p. 316 (Bohn's Class. Lib.), London, 1887. — Tr.

[2] *Cf.* C. Darwin, 1809–1882, *Origin of Species*, and the new inquiries and investigations consequent upon it. — Tr.

[3] Theodore Kerkkrinck, 1640–1693, a Dutch physician, born at Amsterdam, died at Hamburg, a fellow-pupil with Spinoza, 1632–1677, of a physician, Francis Van der Ende, and author of works on medicine, anatomy, and chemistry, among which was the one here referred to by Leibnitz: *Anthropogeniæ ichnographia sive conformatio fœtus ab ovo usque ad ossificationis principia, in supplementum osteogeniæ fœtuum*, 4to, Amstelodami, 1671. His *Opera omnia anatomica*, 2d ed., 4to, Lugd. Bat., 1717. *Cf.* Dutens, *Leibnit. op. om.*, 5, 173, 199; F. Pollock, *Spinoza: His Life and Philosophy*, p. 13. — Tr.

[4] The Priscillianists were an heretical sect which appeared in Spain toward the close of the fourth century, and continued till about the middle of the sixth. Their speculative doctrines are a combination of Christianity with Gnosticism and Manichæism. Their moral system was rigidly ascetic, and celibacy was required. The charges of immorality and licentiousness so frequently brought against them by their adversaries, "are, to say the least, not sufficiently well authenticated." The information that they made use of these verses of Vergil, to which they attached a religious dogma, as a foundation for their heresy and alleged sexual license comes from a letter of Jerome, c. 346–420, to Ctesiphon, *Epist.* 133 *ad Ctesiphontem*, *Opera*, ed. Vallarsi, Veronæ, 1734–42, Vol. 1, p. 1029, a; 2d ed., Venetiis, 1766–72; J. P. Migne, *Patrol. s. Lat.*, Vol. 22, p. 1150–51, Paris, 1845, latest ed., Paris, 1864–66. *Cf.* also Sulpicius Severus, 363–406, or 410, *Histor. Sacra*, or *Chronica*, Bk. II., chaps. 46–51, and *Dialog.*, III., 11–13, ed. C. Halm, Vienna, 1866 (Vol. 1 of the *Corpus Script. Eccles. Latinorum*), and J. Bernays, *Die Chronik des Sulp. Severus*, Berlin, 1861; A. Neander, *Hist. of the Christ. Relig. and Church*, 2, 771–779, Boston, Houghton, Mifflin & Co.; Gibbon, *Decline and Fall*, Milman's ed., chap. 27; Smith and Wace, *Dict. of Christ. Biog.*, 4, 470–478, London, John Murray, 1887. — Tr.

Cum pater omnipotens fœcundis imbribus æther
Conjugis in lætæ gremium descendit et omnes
Magnus alit magno commistus corpore fœtus.[1]

In a word according to this hypothesis the male would no longer be more than the rain. But Leeuwenhoek[2] has rehabilitated the masculine genus, and the other sex is in its turn degraded, as if it performed only the earth's function as regards seeds, by furnishing them place and nourishment; a view which might obtain even if we still maintained the theory of the eggs. But this does not prevent the imagination of the female from having a great influence upon the form of the fœtus, even if we supposed that the animal has already come from the male. For this is a condition destined ordinarily to a great change, and much more susceptible also to extraordinary changes. It is asserted that the imagination of a woman in this condition, who was shocked by the sight of a cripple, caused the separation of the hand of the fœtus very near its term, and that this hand was subsequently found in the after-birth; a statement, however, which requires confiration. Perhaps some one will arise who will maintain that, lthough the soul can come only from one sex, both sexes urnish something of the organism, and that from the two odies one is made, just as we see that the silk-worm is as it ere a double animal, and encloses a flying insect under the orm of the caterpillar: in such darkness are we still upon so nportant a point. Some day perhaps the analogy of plants ill give us some light, but at present we have but little in-ormation regarding the generation of plants themselves, the urmise concerning the pollen which has been remarked, as hat which might correspond to the masculine semen, not et being very clear. Besides a slip of a plant is very often apable of giving a new and complete plant, to which no nalogy is as yet seen in animals; also we cannot say that he foot of an animal is an animal, as each branch of the tree eems to be a plant capable of fruit-bearing by itself. Fur-hermore the intermixture of species, and even the changes n one and the same species often go on with much success n plants. Perhaps at some time or place in the universe he species of animals are, or were, or will be more subject o change than they are at present with us, and many animals ho have somewhat of the cat, as the lion, the tiger, and the ynx, might have been of one and the same race and may now e as it were new subdivisions of the ancient species of cats. Thus I always return to what I have more than once said that ur determinations of physical species are provisional and roportional to our knowledge.[1]

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[1] *Georg.*, 2, 325–327. — Tr.

[2] Antoon van Leeuwenhoek, 1632–1723, a distinguished Dutch naturalist, "the father of scientific microscopy," who shares with Malpighi, 1628–1694, the discovery of the capillary circulation of the blood, thus completing the doctrine of Harvey, 1598–1657, and with his own pupil, Ludwig Hamm, the discovery of the active moving constituents of the seminal fluid, which he called "animalcula spermatica," or "spermatozoa." Leeuwenhoek communicated his discovery, 1677, of the spermatozoa in a letter to Sir Christopher Wren, 1631–1723, President of the Royal Society, 1681, "De ovario, et imaginovis ejus ovis; homo ex animalculo oritur." The letter is found in Leeuwenhoek's *Arcana naturæ detecta sive epistolæ ad societatem Regiam Angliam scriptæ*, Delft, 1695, 4to, p. 28 *sq.* Leeuwenhoek strenuously opposed the doctrine of "spontaneous generation," and did more than any other naturalist to overthrow it. *Cf.* Dutens, *Leibnit. op. om.*, 5, 173, 174, 319, 337; 6, Pt. I., 211, 213, 218, Gerhardt, *Leibniz. philos. Schrift.*, 3, 562, 565, 571, 579, 580, Dutens, 2; Pt. I., 329, 330; Pt. II., 214, *Protogæa*, § 17; *Système nouveau*, § 6, Gerhardt, 4, 480, Erdmann, 125, b, Jacques, 1, 471, trans. Duncan, *Philos. Wks. of Leibnitz*, 73; *Principes de la Nature et de la Grace*, § 6, G., 6, 601, E., 715, b, trans. D., 212; G., 7, 568. He published the greater part of his discussions and investigations in 112 papers in the *Philos. Transactions* of the Royal Society, and in 26 papers in the *Memoirs of the Paris Academy of Sciences*, of both of which bodies he was a member. The most complete collection of his works is the *Opera omnia seu arcanæ naturæ ope microscopiorum detecta*, Leyden, 1719–22, 4 vols., 4to; from this, *Select Works*, trans. by Samuel Hoole, London, 1800–1807, 2 vols, 4to, does not contain the letter to Wren. There is a Life in Dutch by Haaxman, Leyden, 1875. — Tr.

§ 24. *Ph.* Men at least in making their divisions of species ave never thought of substantial forms, save those who, in his single corner of the world where we are, have learned the anguage of our schools.

Th. It seems that lately the term *substantial forms* has ome into disrepute with certain classes and that they are shamed to speak of them. Meanwhile there is perhaps in hat circumstance more of fashion than of reason. The scho-astics employed inaptly a general notion, when they used it o explain particular phenomena; but this abuse does not destroy the thing. The soul of man is a little disconcerting to the dogmatism of some of our moderns. There are some who admit that it is the form of man; but they also affirm that it is the only substantial form of known nature. Descartes thus speaks of it, and he censures Regius[1] because he contested this quality of a substantial form of the soul and denied that man was a *unum per se*, a being endowed with a veritable unity.[2] Some think that this excellent man did this as a matter of policy. I doubt this a little because I think he had reason for so doing. But this privilege is not given to man only, as if nature were made of broken sticks. There is room for the judgment that there is an infinite number of souls, or, to speak more generally, of primitive entelechies, which have something analogous to perception and appetite, and which are all, and remain always, substantial forms of bodies. It is true that species apparently exist which are not truly a *unum per se* (*i.e.* bodies endowed with a veritable unity, or with an invisible essence which makes their entire active principle), any more than a mill or watch might be. The salts, the minerals, and the metals may be of this nature, *i.e.* simple contextures o masses in which there is a certain regularity. But the bodies of both, *i.e.* animate bodies as well as the contextures without life will be specified by their internal structure, since in those indeed which are animate, the soul and the machine,[3] each by tself, suffice for the determination; for they agree perfectly, nd although having no immediate influence the one upon the ther, they are mutually expressive, the one having concenrated into a perfect unity all that the other has dispersed in he manifold. Thus, when the arrangement of species is the uestion, it is useless to dispute about the substantial forms, lthough it may be well for other reasons to know if there are ny and what their nature is; for without this one would be a tranger in the intellectual world. For the rest the Greeks nd the Arabians have spoken of these forms as well as the Europeans, and if the common people do not speak of them, o more do they speak of algebra or of surds.[1]

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[1] Leibnitz here touches upon the theory of evolution, or development, but eeps himself within very moderate limits in the statement of his views. —TR.

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[1] Pierre Sylvain Régis — Latin, Regius — 1632–1707, a celebrated Cartesian at first destined for the church, but who, on going to Paris to study theolog at the Sorbonne, heard Rohault (*cf. ante*, p. 233, note 2) on Cartesianism became a zealous adherent of the doctrine, renounced the priesthood, and gav himself up to teaching the new philosophy. His enormous success aroused th opposition of Harlay, the Archbishop of Paris, who forbade his teaching. H therefore turned to composition, expounding his philosophical ideas in hi *Cours entier de philosophie*, or *Système général selon les principes de Des cartes*, 4 vols., 4to, Paris, 1690, 2d ed., 3 vols., Amsterdam, 1691. He inter preted Descartes in the sense of empiricism, and thus drew upon himself th philosopher's censure, *cf.* Descartes, Remarks on the Programme of Regius *Works*, ed. Cousin, Paris, 1824–26, Vol. 10, pp. 70–111; see also Veitch, *Th Method, Meditations and Selections from the Principles of Descartes*, 8th ed Edinburgh, 1881, pp. 278, 287. His doctrines were a reaction against the ultr idealism of Malebranche. Other works of his are *Response à la censur philosophiæ cartesianæ*, 12mo, Paris, 1691; *L'Usage de la Raison et de la Fo* 4to, Paris, 1704. — Tr.

[2] *Cf.* Descartes, 1596–1650, *Epist.*, I., 89, pp. 292–293, ed. of 1668, p. 261, e of 1692, Cousin's ed., Vol. 8, pp. 579–583; Gerhardt, *Leibniz. philos. Schrift* 6, 547, 550 *sq.* — Tr.

[3] *I.e.* body, according to the linguistic usage of the Cartesians. — Tr.

§ 25. *Ph.* Languages were formed before the sciences, and gnorant and unlettered people reduced things to certain pecies.

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[1] The doctrine of the *substantial forms*, of which the Mediæval schoolmen ade so much use, finds its origin and point of departure in the εἶδος and οὐσία f Plato and Aristotle. Aristotle used οὐσία in two senses; in its primary and roper signification, as a concrete and individual substance, a compound σύνολον) of matter (ὕλη) and the determining principle, form (εἶδος), in which ense individual things were called "first substances" (πρῶται οὐσίαι); secndly, as applied to the genus, in which sense species were called "second ubstances" (δεύτεραι οὐσίαι). According as they were nominalists or realists, he Schoolmen, in their interpretation of Aristotle, regarded the substantial orms as mere concepts of genus and species, the product of the abstractionower of the mind, which might correspond to, though they did not constitute, he reality of things; or, as real universals existing in concrete things, constiuting their inmost essence and determining its nature. Locke adopts the ominalistic view of these forms as purely subjective having no corresponding eality in nature. Leibnitz maintains them in the realistic sense as expresions of the reality of the "first substances," and in direct connection with hem develops his doctrine of monads. *Cf. Discours de Metaphys.*, 1686, § 10 q., Gerhardt, 4, 443; *Système nouveau*, 1695, §§ 3, 4, 11, G. 4, 478 *sq.* (also *bid.* first draft, G. 4, 473), Erdmann, 124, Jacques, 1, 470, trans. Duncan, *Philos. Wks. of Leibnitz*, 72; *De ipsa natura*, 1698, §§ 11, 12, G. 4, 510, E. 157, J. 1, 462, D. 120; also G. Hartenstein, *Ueber Leibniz's Lehre v. d. Verhältniss l. Monaden z. Körperwelt*, in his *Histor. philos. Abhandl.*, Leipzig, 1870, 469 q., Stein, *Leibniz u. Spinoza*, Berlin, 1890, 158 *sq.*, Dillmann, *Eine n. Darstg. l. Leibniz. Monadenlehre*, Leipzig, 1891, 225 *sq.* For Leibnitz's theological se of Aristotle's forms — εἴδη — *cf. Théodicée*, Pt. III., §§ 335–6, and J. H. v. Kirchmann's note 246 thereto, Band 80, p. 133, and note 62 f., Bd. 82, p. 87, of is *Philos. Bibliothek.* Leipzig, 1879. On the εἶδος and οὐσία of Plato and Arisotle, *cf.* Wallace, *Outlines of the Philos. of Aristotle*, §§ 10, 31, 32, 34, 37, and Zeller, *Philos. d. Griech.*, II., 1 [Vol. 3], 658 *sq.*, 4th ed. 1889, II. 2 [Vol. 4], 304 q., 3d ed., 1879. For the Scholastic doctrine, *cf.* B. Hauréau, *Histoire de la hilos. scholastique*, 2d ed., Paris, 1872–80; A. Stöckl, *Gesch. d. Philos. d. Mittelalters*, Mainz, 1862–66; C. Prantl, *Gesch. d. Logik im Abendlande*, Leipzig, 1855–1870, *passim.* *Cf.* also G. 1, 16, 22 *sq.*, 4, 208. — Tr.

Th. True, but persons who study these matters rectify the popular notions. Assayers have found exact means of discerning and separating the metals; botanists have enriched wonderfully the doctrine of plants, and the experiments made upon insects have opened for us a new path in the knowledge of animals, but we are still very far distant from the half of our course.

§ 26. *Ph.* If species were a work of nature they could not be conceived so differently by different persons. Man appears to one person an animal without feathers, with two feet and with large nails, and another after a more profound examination adds to these reason. Many people, however, determine the species of animals by their *external form* rather than by their *birth*, since the question has been put more than once whether certain human *fœtuses* should be admitted to baptism or not, for the sole reason that their external configuration differed from the ordinary form of infants, without knowing whether they were not as capable of reason as infants cast in another mould, some of whom are found, who, although of an approved form, are never able to exhibit during their entire life as much reason as appears in an ape or elephant, and who never give any indication of being governed by a rational soul. Whence it appears evident that the external form which alone has found mention, and not the faculty of reasoning which no one could know would be wanting in its time, has been regarded essential to the human species. And in these circumstances theologians and jurisconsults the most learned have been compelled to renounce their sacred definition of rationa animal, and to put in its place some other essence of the human species. "Mr. Ménage," (Menagiana Tom. I. p. 278 of the Dutch edition of 1694,)[1] "furnishes us the example of a certain abbot of St. Martin, which deserves to be related When this abbot of St. Martin, he says, came into the world he had so little the figure of a man, that he resembled rather a monster. For some time they deliberated whether he should be baptized. He was baptized however, and declared a man provisionally, *i.e.* till time should show what he was. He as so disfigured by nature, that they called him all his life he Abbot Malotru. He was of Caen." There was a child ho came very near being excluded from the human species imply because of his shape. He narrowly escaped as it was, nd it is certain that a figure a little more deformed would ave deprived him of it for ever and have caused him to erish as a being who ought not to pass for a man. Yet no eason can be given why a rational soul could not have been dged in him, if the lineaments of his face had been a little iore altered; why a visage a little longer, or a flatter nose, or wider mouth could not have subsisted as well as the rest of ie irregular figure with a soul and with qualities which made im capable, wholly disfigured as he was, of being clothed ith dignity in the church.

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[1] *Menagiana sive excerpta ex ore Ægidii Menagii*, 1st ed., 1 vol., 12mo Paris, 1693, 3d ed., enlarged and corrected by La Monnoye, Paris, 1715. Erd mann, Jacques, and Schaarschmidt in his German trans. erroneously read 1649 — Tr.

Th. Up to the present time, no rational animal has been ound with an external figure very different from ours, there- re, when the question arose of baptizing a child, race and gure have always been considered only as marks by which to idge whether it was a rational animal or not. Thus theo- gians and jurisconsults have never needed to renounce for iat reason their sacred definition.

§ 27. *Ph.* But if that monster, of which Licetus,[1] Bk. I., iap. 3, speaks, with a man's head and a hog's body, or other ionsters, with the heads of dogs and of horses, etc., upon the odies of men had lived and could have spoken, the difficulty ould be much greater.

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[1] Fortunio Liceti, 1577–1657, a celebrated Italian physician and scholar, who ught logic at Pisa, 1600–1609; philosophy at Padua till 1631; then philosophy Bologna; and finally, theoretic medicine at Padua from 1645 till his death. was a great admirer of Aristotle, and wished to admit nothing beyond his ctrines, and thus contributed to render both philosophy and medicine sta- nary. For the matter to which Leibnitz here refers, *cf.* Licetus, *De spontaneo ventium ortu, lib. quat.*, fol., Vicentiæ, 1618, Bk. I., chap. 28, pp. 34–36, Sexta nfirmatio spontanei ortus hominum petita ex humanis figuris in belluis, ac pidibus enodatur aperiendo talium figurarum caussas, in which chapter cetus treats of various monsters, referring to his *De monstrorum* mentioned low, and to his father's, Giuseppe Liceti, an Italian physician, died 1599, *alogus de genitalium usu et dignitate*, or *Il Ceva, dell' ouvero eccellenza ed o de' genitali*, 1598, *De monstrorum caussis, natura, et differentiis lib. duo*, ed., 4to, Petavii, 1634, pp. 13, 183, 194: "De monstrorum humanorum reale istentiæ"; the same, with additions by Gerard Blasius, 4to, Amstelodami, 5, pp. 13, 183, 194; the same, in the French trans., *Traité des monstres*, by an Palfyn, 1650–1730, in his *Description anatomique des parties de la femme i servent à la génération*, etc., 4to, Leyden, 1708, pp. 13, 197, 208. — Tr.

Th. I admit it, and if that occurred and if any one had done, as a certain writer, a monk of the olden time, named Hans Kalb (Jean le veau — John the calf) who[1] painted himself with a calf's head, the pen in his hand, in a book he had written, which procedure caused some foolishly to think that this writer had in reality a calf's head, — if, I say, that happened, we should be more cautious hereafter in getting rid of monsters. For there is some probability that reason would maintain it with theologians and with jurisconsults in spite of the figure and even in spite of the differences which the anatomy would furnish to the physicians, which would as little injure the quality of man as the reversal of the viscera in that man whose anatomy some persons of my acquaintance have seen at Paris, which has made some stir, in which nature

“Peu sage et sans doute en débauche
Plaça le foye au costé gauche
Et de même vice versa
Le cœur à la droite plaça,”

i.e. “unwise and doubtless in debauch placed the liver upon th left side and likewise *vice versa* the heart upon the right,’ if I rightly remember some of the verses which the late Mr Alliot[2] the father (a famous physician because he passed a skilful in the treatment of cancers) showed me of his ow making upon this prodigy. It is a matter of course, provide the variety of conformation does not go too far in the cas of rational animals and that no return is made to the time when animals spoke, for then we should lose our especiall peculiar advantage of reason[3] and should henceforth be mor attentive to birth and the external in order to be able to di cern those of Adam's race from those who may descend from a king or patriarch of some canton of apes in Africa; and our learned author was right in his remark (§ 29) that if Balaam's ass had all her life discoursed as rationally as she did once with her master (supposing it was a prophetic vision), she would always have had difficulty in obtaining rank and a seat among women.

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[1] Erdmann and Jacques add “qui” after “le veau.” — Tr.

[2] Pierre Alliot, a French physician of the seventeenth century, born Bar-le-Duc, reputed to have great skill in the treatment of cancer and oth malignant ulcers. His most distinguished patient was Anne of Austria, t mother of Louis XIV., whom he treated unsuccessfully in Paris in 1665. No withstanding his failure, he was appointed physician to the king. His publish works include *Theses medicæ de motu sanguinis circulato et de morbis ex ær* Pont-à-Mousson, 1663, 8vo; *Epistola de cancro apparente*, and *Nuntius prof gati sine ferro et igne carcinomatis*, both Bar-le-Duc, 1664, 12mo. His so Jean Baptiste Alliot, was physician to Louis XIV., and published *Traité cancer où l'on explique sa nature et où l'on propose les moyens les plus sû pour le guerir methodiquement*, Paris, 1698, 12mo. — Tr.

[3] The French text is: “nostre privilege de la raison en preciput,” etc. — T

Ph. You laugh, I see, and perhaps the author laughed also; but, to speak seriously, you see that you cannot always assign fixed limits to species.

Th. I have already agreed to this; for when the question concerns fictions and the possibility of things, the passage from species to species may be insensible, and to discern them would sometimes be about as impossible as to decide how much hair a man must be allowed that he may not be bald. This indeterminateness would be true even when we knew perfectly the internal nature of the creatures under discussion. But I do not see that it can prevent things from having real essences independent of the understanding, and us from knowing them. It is true that the names and limits of species would sometimes be like the names of measures and weights, where choice is necessary in order to have fixed limits. But ordinarily there is nothing of the kind to fear, species too much alike seldom occurring together.

§ 28. *Ph.* It seems we agree here at bottom, although we differ somewhat in terms. I also admit that there is less arbitrariness in the denomination of *substances* than in the names of the *mixed modes.* For few venture to unite the bleating of a sheep with the figure of a horse, or the color of lead with the weight and fixedness of gold, and we prefer to draw copies after nature.[1]

Th. This is not so much because in substances regard is had only to that which exists effectively, as because there is no certainty in the case of physical ideas (which are not very thoroughly understood) that their union is possible and useful, if there is no actual existence to guarantee it. But this also takes place in the modes, not only when their obscurity is impenetrable by us, as sometimes happens in physics, but also when it is difficult of penetration, enough examples of which occur in geometry. For in both of these sciences it is not within our power to make combinations according to our fancy, otherwise we should be right in speaking of *regular decahedrons,* and should seek in the semicircle[1] a *centre of magnitude,* as there is in it *a centre of gravity.* For it is in fact surprising that the first is there, and that the second cannot be. Now while in the modes the combinations are not always arbitrary, we find on the other hand that in substances they sometimes are so; and it often depends on ourselves to make combinations of qualities in order further to define substantial beings in advance of experience, when we understand enough of these qualities to judge of the possibility of the combination. Thus it is that expert gardeners in the orangery can rationally and successfully propose to produce some new species and give it a name in advance.

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[1] That is, to follow experience in the formation of our ideas, and to conform our inner world in general to that furnished by nature. — TR.

§ 29. *Ph.* You will always agree with me that when the question arises of defining species, the number of ideas combined depends upon the different application, industry, or fancy of the one forming this combination, as it is the figure whic regulates most frequently the determination of the species o vegetables or animals, and likewise as regards the majority o natural bodies which are not produced by seeds, it is the colo which is most strongly adhered to. § 30. In truth these ar often only confused conceptions, gross and inexact, and it i very essential that men agree as to the precise number o simple ideas or qualities which belong to a given species or given name, for pains, skill, and time are needed to find simpl ideas which are constantly united. However a few of th qualities composing these inexact definitions are ordinaril sufficient in conversation; but in spite of the stir about genera and species, the forms, of which so much has been said i the schools, are only chimeras which avail us nothing in furnishing an entrance into the knowledge of specific natures.

Th. Whoever makes a possible combination, is not at al mistaken therein, nor in giving it a name; but he is mistake if he thinks that his conception is altogether that which others more expert have conceived under the same name or in the same body. He perhaps conceives a genus too common instead of another more specific. There is nothing in all this contrary to the schools, and I do not see why you return here to the charge against genera, species, and forms, since it is necessary for you to recognize indeed the genera, species, and even the internal essences or forms, which we do not pretend to employ in order to know the specific nature of the thing, although we admit we are still ignorant of them.

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[1] Such combinations of essentially self-contradictory ideas may easily b united in a complex term, and be apparently clear and possible, until analyze and compared with reality, when their confusion and impossibility is at onc made evident. — Tr.

§ 30. *Ph.* It is at least evident that the limits we assign to species are not *exactly conformed* to those established by nature. For in our need of general names for present use, we do not put ourselves to the trouble of discovering the qualities which would give us superior knowledge of their most essential differences and agreements, but we ourselves distinguish them into species in virtue of certain appearances which are manifest to everybody, that we may more easily communicate with others.

Th. If we combine compatible ideas, the limits we assign to species are always *exactly conformed* to nature; and if we are careful to combine ideas actually found together, our notions are also conformed to experience; and if we consider them as provisional only for actual bodies, without excluding experiment made or to be made for further discovery therein, and if we have recourse to experts, when a definite question arises with reference to what is openly understood by the name, we shall not err in the matter. Thus nature may furnish ideas the most perfect and most convenient, but she will not give the lie to those we have which are good and natural, although not perhaps the best and most natural.

§ 32. *Ph.* *Our generic ideas* of substances, as that of metal, for example, do not follow exactly *the models* set them by nature, since you cannot find any body including simply malleability and fusibility without other qualities.

Th. No one asks for such models and it would not be reasonable to ask for them; furthermore they do not occur in the most distinct notions. We never find a number in which there is nothing to notice but multitude in general, an extension in which there is only extension, a body in which there is only

solidity, and no other qualities; and when the specific diffe
ences are positive and contrary it is very essential that th
genus share in them.

Ph. If, then, any one thinks that a man, a horse, an animal
a plant, etc., are distinguished by *real essences* made by nature
he must think that nature is *very liberal with these real essences*
if she produces one of them for the body, another for th
animal, and still another for the horse, and that she bestow
freely all these essences upon Bucephalus; whilst genera an
species are only signs more or less comprehensive.

Th. If you take real essences as these substantial models
which exist as a body and nothing more, an animal and nothin
more specific, a horse without individual qualities, you ar
right in treating them as chimeras. And no one has main
tained, I think, not even the greatest *Realists* of former times
that there are as many substances confining themselves to th
generic as there are genera. But it does not follow that i
general essences are not this, they are merely signs; for I hav
many times remarked to you that there are *possibilities in th*
resemblances. In like manner from the fact that colors are no
always substances or extracted dyes, it does not follow tha
they are imaginary. For the rest you cannot think nature to
liberal; she is so beyond all that we can invent, and all advan
tageous compatible possibilities are found realized upon th
grand theatre of her representations. There were formerl
two axioms among philosophers: that of the *Realists* seeme
to make nature prodigal, and that of the *Nominalists* seeme
to declare her stingy. The one says that nature suffers n
vacuum, and the other that she does nothing in vain. Thes
two axioms are good provided you understand them; for natur
is like a good economist, who saves where it is necessary i
order to be grand at times and places. She is grand in effects
and sparing in the causes she employs.

§ 34. *Ph.* Without amusing ourselves longer with this dis
cussion upon real essences, it is enough that we obtain the pur
pose of language and the usage of words which is to indicat
our thoughts in an abridged form. If I wish to speak to an
one of a species of birds three or four feet in height, whos
skin is covered with something between feathers and hair, of
dark brown color, without wings, but in their place two c

three small branches, like those of the broom, which descend to the lower part of the body, with long and large legs, the feet armed only with three claws and without a tail; I am compelled to make this description whereby I can make myself understood by others. But when I am told that the name of this animal is *Cassowary*, I can then use this name to designate in discourse this entire complex idea.

Th. Perhaps a very exact idea of the covering of the skin or of some other part would suffice by itself alone to distinguish this animal from every other known, as Hercules was known by his gait, and as the lion was recognized by his claw according to the Latin proverb. But the more circumstances you heap up, the less provisional is your definition.

§ 35. *Ph.* We may curtail the idea in this case without prejudice to the thing; but when nature curtails it, it is a question whether the species remains. For example: if a body existed having all the qualities of gold except malleability, would it be gold? it depends upon men to decide. They are then the ones who determine the species of things.

Th. Not at all; they would determine only the name. But this experience would teach us that malleability has no necessary connection with the other qualities of gold taken together. It would teach us then a new possibility and consequently a new species. As for gold which is eager[1] or brittle, this comes only from additions, and is not consistent with the other tests of gold; for the cupel and antimony remove this eagerness from it.

§ 36. *Ph.* A portion of our doctrine follows that will appear very strange. Each abstract idea having a certain name forms a distinct species. But what of that, if nature so wills it? I should be glad to know why a *lap-dog* and a *greyhound* are not as distinct species as a *spaniel* and an *elephant.*

Th. I have distinguished above the different senses of the word *species.* Taking it logically, or mathematically rather, the least dissimilitude may suffice. Thus each different idea will give another species, and it makes no difference whether it has a name or not. But, physically speaking, we do not attend to all the varieties, and we speak either distinctly when the question concerns only appearances, or conjecturally when the question concerns the inner truth of things, presuming therein some essential and immutable nature, like reason in man. We presume then, that whatever differs only by accidental changes, like water and ice, quicksilver in the liquid form and as sublimate, is of the same species: and in organic bodies the provisional mark of the same species is usually placed in the generation or race, as in those most alike it is placed in reproduction. It is true we cannot judge with precision, for lack of knowledge of the inner nature of things; but, as I have said more than once, we judge provisionally and often conjecturally. But when we wish to speak only from the external, for fear of saying nothing certain, there is some latitude; and to dispute then whether a difference is specific or not is to dispute about the name; and in this sense there is so great a difference between dogs, that we may very well say that the house-dogs of England and the dogs of Boulogne belong to different species. It is not impossible, however, that they belong to a remote identical or similar race, which we should find if we could go back very far, and that their ancestors were alike or identical, but that after great changes, some of the posterity have become very large and others very small. We may indeed believe also without offending reason that they have in common an inner nature, constant, specific, which is no longer subdivided thus, or which is not found here in several other such natures, and consequently is no longer varied save by accidents; although there is also nothing to make us judge that this must necessarily be so in all that which we call the lowest species (*species infima*). But there is no likelihood that a spaniel and an elephant are of the same race, and that they have such a specific common nature. Thus in the different sorts of dogs, speaking of appearances, we may distinguish species, and speaking of the inner essence we may be in suspense: but comparing the dog and the elephant there is no reason for attributing to them externally or internally that which would make us think them of one and the same species. So there is in this case no occasion for suspense in the face of the presumption. In man we can also distinguish species logically speaking, and if we stopped with the external we should find also, speaking physically, differences which could pass as specific. Thus a traveller was found who thought hat the Negroes, Chinese, and finally the Americans were not f one and the same race among themselves nor with the eoples resembling us. But as we know the essential inner ature of man, *i.e.* the reason, which dwells in the man himelf and is found in all men, and as we notice nothing fixed nd internal among us which forms a subdivision, we have no eason to judge that there is in men, according to the truth of he inner nature, an essential specific difference, while such ifference is found between man and beast, supposing that the easts are only empirical, according as I have explained above, s in fact experience gives us no reason for forming any other udgment.

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[1] *Cf.* Locke, *Philos. Works,* Vol. 2, p. 65 (Bohn's ed.). — TR.

§ 39. *Ph.* Let us take the example of an artificial thing whose internal structure is known to us. A time-piece that nly indicates the hours, and one that strikes, are of one pecies only for those who have only one name by which to esignate them; but for him who designates the first by the ame *watch*, and second *clock*, they are *in relation to him* different species. It is the name and not the inner disposition which makes a new species, otherwise there would be too many species. There are watches with four wheels, and thers with five; some have strings and fusees,[1] and some not; ome have a free balance, and others are regulated by a spiral pring and others by hog's bristles. Does any one of these hings suffice to make a specific difference? I say no, so long as these time-pieces agree in name.

Th. And I for my part say yes, for without stopping at names, I should consider the varieties of contrivance and specially the differences of the balance; for since a spring has been applied which governs the vibrations according to ts own and consequently renders them more equal, pocket-watches have changed their character, and have become incomparably more accurate. I have indeed mentioned before another principle of equality which might be applied to watches.

Ph. If any one wishes to make divisions based upon the differences which he knows in the internal configuration he may do so; but they would not be distinct species with relation to the people who are ignorant of this construction.

[1] Locke has "physies," *Philos. Works*, Vol. 2, p. 67 (Bohn's ed.). — TR.

Th. I do not know why those with you always wish t make virtues, truths, and species depend upon our opinion o knowledge. They exist in nature, whether we know it an approve or not. To speak otherwise is to change the name of things and received language without any reason. Men u to the present time have believed that there are many kin of clocks or watches, without informing themselves in wh they consist or how they may name them.

Ph. You have however recognized not long since that whe men wish to distinguish physical species by appearances, the limit them in an arbitrary way, where they find it to the pu pose, *i.e.* according as they find the difference more or le considerable and according to the end they have. And yo yourself have made use of the comparison of weights an measures, which are regulated and given their names accor ing to the good pleasure of man.

Th. It is since then that I have begun to understand yo Between *specific differences* purely *logical*, for which the lea variation of assignable definition suffices, however accident it be, and between *specific differences* purely *physical*, base upon the essential or immutable, we may place a mean, whic cannot be precisely determined; it is regulated by the mo important appearances, which are not altogether immutabl but which do not change easily, the one approaching th essential more than the other. And as a connoisseur too ma go farther than another, the thing appears arbitrary and h some relation to men, and it appears convenient to regula names also according to these principal differences. We ca then speak thus, that there are *specific civil differences* an *nominal species* which must not be confounded with what have called above *nominal definitions*, and which have pla in differences specifically logical as well as physical. For th rest, besides common usage, the laws themselves may gi authority to the significations of words, and then *the speci* would become *legal*, as in the contracts which are call *nominati*, *i.e.*, designated by a particular name. For examp as the Roman Law made the age of puberty commence at th end of the fourteenth year. This entire consideration is n to be despised, but I do not see that it is of very much u here, for besides the fact that you have appeared to me pply it sometimes where it did not apply, we shall accomlish nearly the same result if we consider that it rests with en to proceed in subdivisions as far as they find them to e purpose, and to abstract ulterior differences without the ecessity of denying them; and that it also rests with them choose the certain, notwithstanding the uncertain, in order fix some notions and measures by giving them names.

Ph. I am much pleased that we are here no longer so far part as we appeared. § 41. You agree then, sir, I see, that rtificial as well as natural things are species contrary to the iew of some philosophers. § 42. But before leaving the ames of substances, I would add that of all the diverse ideas e have, they alone are ideas of substances which have proper r individual names; for it rarely happens that men need to ake frequent mention of any individual quality or other dividual accident. Besides individual acts perish at once nd the combination of circumstances which thereby comes bout only subsists as in the substances.

Th. There are, however, cases where it has been necessary o remember an individual accident and to give it a name; hus your rule is ordinarily good, but there are exceptions to t. Religion furnishes us with them; for example we celerate each year the memory of the birth of Jesus Christ. The reeks call this event Theogeny, and that of the adoration of he Magi, Epiphany. And the Hebrews call the *Passah par xcellence* the passage of the angel who caused the death of he eldest sons of the Egyptians without touching those of the ebrews; and this is why they were to celebrate its memory very year. As for the *species of artificial things*, the scholastic hilosophers found difficulty in admitting them into their *prelicaments;* but there was little necessity for their hesitation ince these predicamental tables were destined for use in makng a general review of our ideas. It is well however to recgnize the difference existing between perfect substances and etween the assemblages of substances (*aggregata*) which are ubstantial entities composed either by nature or by the art of an. For nature has also such aggregates, as the bodies whose ixture is imperfect (*imperfecte mixta*) to use the language of ur philosophers, which constitute no *unum per se* and do not ossess in themselves a perfect unity. I believe however that

the four bodies which they call elements, and think simple, an
the salts, metals, and other bodies which they think are pe
fectly mixed, and to which they attribute their temperaments
are not *unum per se* either; so much the more as we mus
judge that they are uniform and homogeneous only in appea
ance, and even a homogeneous body would not cease to be
mass. In a word, the perfect unity must be reserved to bodie
animated, or endowed with primitive entelechies; for thes
entelechies are analogous to souls and are as individual an
imperishable as they; and I have elsewhere affirmed that thei
organic bodies are practically machines, but which surpass th
artificial machines of our invention as much as the inventor c
the natural machines surpasses us. For these natural machine
are as imperishable as the souls themselves, and the anim
with the soul subsists always: it is (the better to explain m
self by something pleasing, wholly laughable as it is,) as if
harlequin wished to strip himself in the theatre, but could nc
succeed because he had an indefinite number of garments on
upon another; although these infinite replications of organi
bodies, which exist in an animal, are not so similar nor s
applied the one to the other, as the garments, nature's a
being of a wholly different subtility. All this shows that th
philosophers have not been wholly in the wrong in putting s
great distance between artificial things and between natur
bodies endowed with a real unity. But it belonged only t
our time to develop this mystery and make understood it
importance and consequences in order thoroughly to establis
natural theology and what is called Pneumatics,[2] in a mann

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[1] Leibnitz here alludes to the four elements of Empedocles, c. 492–c. 43
B. C., *viz.*, fire, air, earth, water, adopted by Plato and Aristotle and called l
the Peripatetics warmth, cold, dryness, humidity, a mixture of which in var
ing proportions constituted all bodies. *Cf.* Zeller, *Philos. d. Griec.*, I. 2 [V
2], 758 *sq.*, 5th ed., 1892, II. 1 [Vol. 3], 796 *sq.*, 4th ed., 1889, II, 2 [Vol. 4], 43
sq., 832 *sq.*, 3d ed., 1879. The state of a body resulting from the proportion
disposition of these primary constituent elements or qualities was called i
temperament, the character of the temperament varying according to the pr
dominance of one or more of the elements. The scholastics discussed t
question whether the temperament comprised these four primary qualities,
whether it did not consist in a fifth simple quality, the outcome of the recipr
cal action of the four primary qualities, which resulted in their entire destru
tion. *Cf.* also Gerhardt, *Leibniz. philos. Schrift.*, 4, 207. — Tr.

[2] *Cf. ante*, p. 50, note 2. Schaarschmidt states that Pneumatics — *Pneumat*
— with the meaning — Doctrine of the Spirit, *Lehre vom Geiste* — Psycholo

ıly natural and in agreement with our experiments and ıderstanding, and requiring the loss of none of the important nsiderations they are destined to furnish, or rather enhancg their value, as does the system of pre-established harmony.[1] ıd I believe that we can best conclude this long discussion the names of substances only by that means.

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occurs in Alsted's *Encyclopædie*, Herborniæ, 1630, *cf. ante*, p. 311, note 2, and ıt Stephen Chauvin in his *Lexicon philosophicum*, Leovardiæ, 1713, adopted ınd explained it by Pneumatology and Pneumatosophy. The term is now ıfined to physical science, and denotes that department of hydrodynamics ıich treats of the properties of gases as distinguished from liquids. *Cf.* 'auth-Flemming, *Vocab. of the Philos. Sciences*, p. 388, New York, Sheldon Co., 1883. — Tr.

[1] *Cf. New Essays*, Bk. IV., chap. 10, §§ 7 and 9, *infra*, pp. 505, 507; *Système uveau*, §§ 14–16, Gerhardt, 4, 484–86, Erdmann, 127, a–128, Jacques, 1, 475–77, ıns. Duncan, *Philos. Wks. of Leibnitz*, 77–79; *Considerations sur les principes vie*, etc., G. 6, 541, E. 430, trans. D. 165; *Principes de la nature et de la ıce*, §§ 7–13, G. 6, 602–604, E. 716, trans. D. 212–215; *Animadversiones in rtem generalem Principiorum Cartesianorum*, Pt. I. ad Art. 14, G. 4, 358, ıns. D. 50; *Leibniz gegen Descartes und den Cartesianismus*, G. 4, 292–294, l–403, 405–406, E. 176, trans. D. 132–138, and his note 49, p. 382; *Med. de Cog. r. et Ideis*, G. 4, 424, E. 80, a, trans. D. 30. According to Leibnitz, his ctrine of monads requires as its necessary complement the existence of God, ıce the single monads, expressing in their own experience all that is beyond ım, yet without influence on other monads, cannot furnish a sufficient ound or reason for the harmony and connection of things in a universal rld-order. This harmonious world-order existing, its sufficient ground or ıson must be found in the absolute being, God, who has given to each ınad the nature which makes it capable of developing itself in its extreme lividuality in accord and correspondence with every other. The pre-established harmony is thus an actual proof, in accord with experience, of the stence of God, and the suggestion of reason in the ontological argument as proved by Leibnitz, is confirmed by the comparative and comprehensive dy of the phenomena of nature. For expositions and criticisms of Leibnitz's ctrine, *cf.* Dewey, *Leibniz's New Essays*, chaps. 11, 12; E. Zeller, *Gesch. d. utschen Philos. seit Leibniz*, 2d ed., München, 1875, pp. 88–98, 124–127; F. A. nge, *Gesch. d. Materialismus*, 3d ed., Leipzig u. Gerlohn, 1875 *sq.*, Bk. I., t. IV., chap. 4, Eng. trans. by E. C. Thomas, 3 vols., Boston, Vol. 2, pp. *sq.*; Kuno Fischer, *Gesch. d. n. Philos.*, Bd. II., Leibniz, 3d ed., Heidelberg, 9, pp. 455 *sq.*, 539 *sq.* — Tr.

CHAPTER VII

OF PARTICLES

§ 1. *Ph.* Besides the words which are used to *name* ideas, w need those which signify the *connection* of ideas or propos tions. *This is, this is not,* are general signs of *affirmation* (*negation.* But besides the parts of propositions the mind als binds together sentences and entire propositions, § 2. availin itself of words expressing this union of different affirmatio and negations and which are called *particles;* in whose prop use the art of speaking well principally consists. It is order that reasoning be consecutive and methodical that tern showing the *connection, restriction, distinction, opposition, e phasis,* etc., are needed. And when they are despised tl hearer is embarrassed.

Th. I admit that particles are very useful; but I am n aware that the art of speaking well consists principally their proper use. If any one presents only aphorisms detached theses, as they often do in the universities, or as the case of that which they call among the jurisconsults *articulate* libel, or as in the *articles* which are offered to t witnesses, then provided we arrange these propositions w we shall accomplish very nearly the same result in maki them understood as if we had put in the connective and t particles; for the reader supplies them. But I admit the would be trouble if you put in the particles badly, and mu more than if you omitted them. Particles seem to me a to unite not only the parts of discourse composed of propo tions and the parts of the proposition composed of ideas, l also the parts of the idea, composed in many ways by t combination of other ideas. And it is this last connecti which is indicated by the *prepositions,* while the *adve* modify the affirmation or negation in the verb; and the *c junctions* modify the connection of different affirmations negations. But I doubt not that you have noticed all t yourself, although your words seem to state otherwise.

§ 3. *Ph.* The part of grammar which treats of particles een cultivated less than that which represents in order the *ases, genders, modes, tenses, gerundives,* and *supines.* It is true hat in some languages they have also arranged the particles nder some titles by distinct subdivisions with great appearnce of exactness. But it is not sufficient to run through hese catalogues. One must reflect upon his own thoughts in rder to observe the forms which the mind takes in discoursng, for the particles are so many indications of the action of he mind.

Th. It is very true that the doctrine of the particles is mportant, and I wish we might enter into much greater etail thereupon. For nothing would be more suited to make nown the different forms of the understanding. *Genders* are f no account in philosophical grammar, but the cases correpond to the *prepositions,* and often the preposition is enveloped n the noun and as it were absorbed, and other particles are oncealed in the inflections of the verbs.

§ 4. *Ph.* In order properly to explain particles it is not ufficient to render them (as is usual in a dictionary) by the vords of another language which approach most nearly their neaning, because it is as difficult to comprehend their precise neaning in one language as in another; besides the significaions of related words in two languages are not always exactly he same and indeed they vary in one and the same language. remember that in the Hebrew language there is one particle f a single letter[1] of which there are reckoned up more than ifty significations.

Th. Scholars have attempted to make special treatises upon he particles of the Latin, Greek, and Hebrew; and Strauchius,[2] celebrated jurisconsult, has published a book upon the use f particles in jurisprudence, where their signification is of no mall consequence. We ordinarily find, however, that it is ather by means of examples and synonymes that they attempt o explain them, than by distinct notions. Further we can not always find a general or formal signification for them, a the late Bohlius[1] called it, which can satisfy all the examples but notwithstanding this we can always reduce all the uses o a word to a definite number of significations. And this i what should be done.

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[1] *I.e.* the adverb ל. — TR.

[2] Johann Strauch, 1612–1680, the maternal uncle of Leibnitz, a distinguished urisconsult, Professor at Leipzig, Jena, and Giessen, and Syndicus in Braunchweig; *cf.* Guhrauer, *G. W. Freiherr v. Leibnitz,* Pt. I., Bk. I., pp. 6, 35 *sq.,* nd *Anmerkungen z. erst. Buche,* pp. 6, 7. The book here referred to by eibnitz is entitled: *Lexicon particularum juris s. de usu et efficacia quorndam syncategorematum et particularum indeclinabilium.* — TR.

§ 5. *Ph.* In fact the number of significations greatly exceed that of the particles. In English the particle *but* has very different significations: (1) when I say: *but to say no more,* (*mai* pour ne rien dire de plus) as if this particle indicated that th mind stops in its course before it has reached the end. Bu saying: (2) *I saw but two planets* (je vis *seulement* deux planetes) the mind restricts the sense of what it means to that whic has been expressed by the exclusion of everything else. An when I say (3): *you pray, but it is not that God would bring yo to the true religion, but that he would confirm you in your ow* (vous priez Dieu *mais* ce n'est pas qu'il veuille vous amener la connaissance de la vraye Religion, *mais* qu'il vous confirm dans la vostre), the first *but* (or *mais*) designates a suppositio in the mind which is otherwise than it should be, and th second shows that the mind puts a direct opposition betwee what precedes and what follows. (4) *All animals have sens but a dog is an animal* (tous les animaux ont du sentimen *mais* le chien est un animal). Here the particle signifies th connection of the second proposition with the first.

Th. The French *mais* (but) may be substituted in all thes instances except the second; but the German *allein*, taken a a particle, which signifies a kind of mixture of *mais* (but) an *seulement* (only), may doubtless be substituted instead of *b* in all these examples except the last, where its use may be little doubtful. *Mais* (but) is also rendered in German som times by *aber*, sometimes by *sondern*, which indicates a sep ration or segregation and approaches the particle *allein*. F a proper explanation of the particles, it is not sufficient make an abstract explication as we have just made here; b we must proceed to a paraphrase which may be substituted its place, as the definition may be put in the place of the thing defined. When we have striven to seek and to determine these *suitable paraphrases*, in all the particles so far as they are susceptible of them, we shall have regulated their significations. Let us try to attain this result in our four examples. In the first we mean: Thus far only speak we of this, and no farther (*non più*); in the second: I see only two planets, and no more; in the third: You pray God, and for this only, viz. to be confirmed in your religion, and no more, etc.; in the fourth, it is as if we said: all animals have sense; it is sufficient to consider that only, and no more is needed. The dog is an animal, he then has sense. Thus all these examples indicate limits, and a *non plus ultra*, whether in things, or in discourse. Thus *but* is an end, a limit of the course, as if we said: stop, we are there, we have reached our *But*. *But*, *Bute*, is an old Teutonic word, signifying something fixed, an abode. *Beuten* (an obsolete word found still in some church songs) is to abide. *Mais* originates from *magis*, as if any one wished to say: *as for the surplus we must leave it*, which is the same as saying: No more is needed, it is enough, let us come to something else, or this is something else. But as the use of languages varies in a strange manner, it would be necessary to enter much farther into the detail of examples in order sufficiently to regulate the significations of particles. In French we avoid the double *mais* by a *cependant* (however), and we should say: Vous priez, *cependant* ce n'est pas pour obtenir la verité, mais pour estre confirmé dans vostre opinion (You pray, not however (*cependant*) to obtain the truth but (*mais*) to be confirmed in your opinion). The *sed* of the Latins was often expressed formerly by *ains*, which is the *anzi* of the Italians, and the French in modifying it have deprived their language of an advantageous expression. For example: There was no certainty about it, yet (*cependant*) we were persuaded of what I have informed you, because we like to believe what we wish; but it has been found that it was not so; but (*ains*) rather, etc. (Il n'y avoit rien de seur, *cependant* on estoit persuadé de ce que je vous ay mandé, parce qu'on aime à croire ce qu'on souhaite; mais il s'est trouvé que ce n'estoit pas cela; ains plustost, etc.).

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[1] Samuel Bohl, 1611–1689, Professor at Rostock, who devoted himself to t furtherance of the study of Hebrew in Germany, and whom Leibnitz mentio because of his works on the doctrine of the Hebrew Vowel- and Accent-Sign *cf.* Dutens, *Leibniz. op. om.*, 5, 190. He published a large number of wor among which were *Scrutin. S. s. ex accentibus*, 1636, and *Dissertat. pro f mali Signif. S. S. eruenda*, Rostock, 1637.—TR.

§ 6. *Ph.* My purpose has been to touch this matter only very slightly. I would add that particles often include eithe constantly or in certain constructions the sense of an entire proposition.

Th. But when it is *a complete sentiment*, I think that it is only by means of a kind of ellipsis; otherwise it is the *interjections* alone which in my opinion can subsist by themselves and say all in a word, as *ah!* (*hoi me!*). For when we say *mais*, adding nothing more, it is an ellipsis for: *but let us wait for the confirmation of intelligence* and not flatter ourselves unduly. There is something approximating to this in the *nisi* of the Latins: *si nisi non esset*, if there were not but (*mais*). For the rest I should not be displeased, sir, had you entered a little farther into the detail of the turns of the mind which appear marvellous in the use of the particles. But since we have reason for hastening to conclude this investigation of words and to return to things, I do not wish to delay you longer, although I truly think that languages are the best mirrors of the human mind, and that an exact analysis of the signification of words would show us better than anything else the workings of the understanding.

CHAPTER VIII

OF ABSTRACT AND CONCRETE TERMS

§ 1. *Ph.* It is further to be remarked that terms ar abstract or concrete. Each abstract idea is distinct, so that o two the one can never be the other. The mind must perceiv by its intuitive knowledge the difference between them, an *consequently* two of these ideas can never be affirmed one o another. Every one sees at once the falsehood of these propositions: *humanity is animality or rationality:* this is eviden as any of the generally received maxims.

Th. There is still something to be said thereupon. W admit that justice is a virtue, a habit (*habitus*), a quality, a accident, etc. Thus two abstract terms may be stated one o another. I am furthermore wont to distinguish two kinds o abstracts. There are abstract *logical* terms, and there ar also abstract *real* terms. The *abstract real* terms, or conceive at least as real, are either essences or parts of the essence, or accidents, *i.e.* beings added to substance. The *abstract logical* terms are the predications reduced to terms, as if I said: to be a man, to be an animal; and in this sense the one can be stated of the other, by saying: *to be a man is to be an animal.* But in the realities this has no place. For we cannot say that humanity or man-ness[1] (*l'hommëité*) — (if you please), which is the essence of the whole man, is animality, which is only a part of this essence; yet these abstract and incomplete beings signified by the abstract real terms have also their genera and species which are not less expressed by the abstract real terms: thus there is predication between them, as I have shown by the example of justice and virtue.

§ 2. *Ph.* One may always say that substances have only few abstract names; they have scarcely spoken in the schools of humanity, animality, corporality; and they have never been authorized in the world.

Th. The reason is that but few of these terms were necessary to serve as examples and to throw light upon the general notion, which was the reason why they were not wholly neglected. If the ancients did not use the word *humanity* in the sense of the schools, they said *human nature,* which is the same thing. It is certain also that they said divinity, or rather divine nature; and theologians having found it needful to speak of these two natures and of real accidents, they were attached to these abstract entities in the schools of philosophy and theology, and perhaps to a greater extent than was proper.

CHAPTER IX

OF THE IMPERFECTIONS OF WORDS

§ 1. *Ph.* We have already spoken of the *double use of words.* The one is to register our own thoughts in order to aid our memory which makes us talk to ourselves; the other is to communicate our thoughts to others by means of speech.

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[1] I have taken the liberty to coin the word as an equivalent of the French, which I think is also coined by Leibnitz to express the abstraction of the scholastics. — TR.

These two uses show the perfection or imperfection of words. § 2. When we speak only to ourselves, it is a matter of indifference what words we employ, provided we remember their meaning and do not change it. But § 3. *the use of communication* is also of two kinds, civil and philosophic. The *civil* consists in the conversation and use of the civil life. The *philosophic use* is that made of words for the purpose of giving precise notions and to express in general propositions certain truths.

Th. Very good: words are not less *marks* (*notœ*) for us (as the characters of arithmetic or algebra may be) than signs for others; and the use of words as of signs is as much in place when the question concerns the application of general precepts to the usage of life, as when it concerns the discovery or verification of these precepts. The first *use of signs* is *civil*, and the second *philosophic.*

§ 5. *Ph.* Now it is difficult, chiefly in the following cases, to learn and retain the idea which each word signifies, (1) when these ideas are very complex; (2) when the ideas composing a new one have no natural bond between them, so that there is in nature no fixed measure nor any model to rectify and regulate them; (3) when the model is not easy to be known; (4) when the meaning of the word and the real essence are not exactly the same. The names of the modes are most liable to be doubtful and imperfect for the two first reasons, and those of substances for the two second. § 6. When the idea of the modes is very complex, as that of the majority of the terms of ethics, they rarely have precisely the same signification in the minds of two different persons. § 7. The defect also of the models renders these words equivocal. He who first invented the word *brusquer* (to be abrupt with) understood thereby what he found to the purpose, without informing those who have used it as he of his precise meaning, and without having shown them any constant model. § 8. Common use regulates sufficiently the sense of words for ordinary conversation, but it has no precision; and the signification most conformed to the peculiar nature of the language is every day disputed. Many speak of *glory*, but few have the same understanding of it. § 9. They are only simple sounds in the mouths of many, or at least their meanings are very indefinite. And in a discourse or conversation in which mention is made of *honor, faith, grace, religion, the church,* and above all in discussion, you will notice at once that men have different notions which they apply to the same terms. And if it is difficult to understand the meaning of the terms of the people of our time, it is much more difficult to understand *ancient books.* Fortunate is it that we may pass them by save when they contain what we should believe and do.

Th. These remarks are good: but in regard to ancient books, as we need to understand Holy Scripture above all, and as Roman laws are still of great use in a good part of Europe, we are indeed compelled to consult a great many other ancient books; the Rabbis, the Church Fathers, even the profane historians. Besides the ancient physicians also deserve to be understood. The practice of medicine by the Greeks came through the Arabs to us; the water from the fountain has been made turbid in the streams of the Arabs, and purified in many respects since we have begun to have recourse to the original Greeks. But these Arabs do not cease to be of use and we are assured that Ebenbitar,[1] for example, who in his books on Simples has copied Dioscorides, often serves to throw light upon him. I find also that, next to religion and history, it is chiefly in medicine, as far as it is empirical, that the tradition of the ancients preserved in writing, and in general the observations of another may be of service. I have therefore always held in hig esteem physicians much versed in the knowledge of antiquity and I was very sorry that Reinesius,[1] excellent in both departments (of knowledge), had turned aside to explain the rite and history of the ancients, rather than to recover a part o the knowledge they had of nature, in which it has been shown that he would have been able furthermore marvellously to succeed. When the Latins, Greeks, Hebrews and Arabs shal some day be exhausted, the Chinese, supplied also with ancien books, will enter the lists and furnish matter for the curiosity of our critics. Not to speak of some old books of the Persians Armenians, Copts and Brahmins, which will be unearthed i time so as not to neglect any light antiquity may give on doctrines by tradition and on facts by history. And if there wer no longer an ancient book to examine, languages would tak the place of books and they are the most ancient monument of mankind. In time all the languages of the world will b recorded and placed in the dictionaries and grammars, an compared together; this will be of very great use both for th knowledge of things, since names often correspond to thei properties (as is seen by the names of plants among differen peoples), and for the knowledge of our mind and the wonderful variety of its operations. Not to speak of the origin o nations, which is known by means of solid etymologies whic the comparison of languages will best furnish. But of this have already spoken. And all this shows the use and exten of criticism, little considered by some otherwise very cleve philosophers who take the liberty to speak with contempt o *Rabbinage*[2] and in general of *philology*. We see also tha critics will find for a long time yet matter for fruitful exercise and they will do well not to amuse themselves too much with minutiæ, since they have so many objects more pleasing for treatment; though I well know that minutiæ also are often very necessary with the critics for the discovery of more important knowledge. And as criticism turns in large measure upon the meaning of words and the interpretation of authors, especially the ancients, this discussion about words joined with the mention you made of the ancients, makes me touch upon this important point. But to return to your four defects of nomination, I tell you, sir, that we can remedy them all, especially since writing has been invented and they subsist only through our negligence. For it depends upon us to fix their meanings, at least in any scholarly language, and to agree to destroy this tower of Babel. But there are two defects where the remedy is more difficult, consisting the one in the doubt which exists whether the ideas are compatible, when experience does not furnish them all combined in one and the same subject; the other in the necessity for making provisional definitions of sensible things, when our experience with them is insufficient for more complete definitions: but I have spoken more than once of both these defects.[1]

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[1] Ibn-al-Baitar, c. 1197–1248, a distinguished Arabian botanist, — according to Pouchet the most learned that the Arabian School has produced, — who wrote a general history of simples, or of plants alphabetically arranged, a *materia medica,* based upon and said to contain for the most part the work of the Greek physician Dioscorides, c. 100 A.D., Περὶ Ὕλης Ἰατρικῆς, as well as a variety of facts from other sources, including descriptions of plants not mentioned by either Dioscorides or Pliny the Elder, 23–79. Most of Baitar's works still remain in MSS. in the libraries of Paris and the Escurial. Fr. R. Dietz published a small fragment of the work on Simples in his *Analecta medica ex libris MSS.*, Lipsiæ, 1833, 8vo. There are also *Grosse Zusammenstellung ü. d. Kräfte d. bekannt. einfachen Heil-und-Nahrungsmittel v. . . . Ebn Baithar. Aus d. Arabischen übersetzt v. Dr. Joseph v. Sontheimer,* 2 vols., Stuttgart, 1840–42, and *Traité des simples,* trans. by L. Leclerc, in Inst. de France, Notices et extraits des MSS. de la Bibl. Nationale, vol. 23, Pt. I., Paris, 1877, 4to. For some account of Baitar, *cf.* Leclerc in *Gazette hebdom. de médicine et de chirurgie,* xxii., 97, 129, Paris, 1875; F. A. Pouchet, *Histoire des sciences naturelles au moyen âge,* Paris, 1853, 8vo. Schaarschmidt says that Leibnitz may have been led to the remark which he here makes upon Baitar by the *Exercitationes de homonymis hyles iatricæ,* appended to Claud. Salmasius, 1588–1653, *Plinianæ exercitationes,* P. 104. a. B. 110. a. A., Trajecti-ad-Rhenum, 1689, 2 vols., fol., where different accounts of Dioscorides are amended from Ebnbitar. — Tr.

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[1] Thomas Reinesius, 1587–1667, a physician who wrote on natural histor and medicine, and afterwards devoted himself to philological and antiquaria studies. Among his works were, *Schola jureconsultorum medica, rationem libris aliquot comprehensa, quibus principia medicinae in jus transmissa e professo examinantur*. Lipsiae, 1679. *Syntagma inscriptionum antiquarum cum primis Romae veteris, quarum omissa est recensio in Gruteri opere, cum commentariis*. Lipsiae, 1682, fol. *Cf.* E. Schuchardt, *Lebensbeschreibungen berühmter Ärzte und Naturforscher, welche aus Thüringen stammen*. *Correspondenz-Blätter des allgemeinen ärztlichen Vereins von Thüringen*, Weimar 1888, xvii., 556, 601.—Tr.

[2] A term of disparagement, meaning the study made of the books of th rabbis.—Tr.

Ph. [I am going to tell you some things which will serve further to clear up to some extent the defects you have just remarked, and the third of those which I have indicated makes it seem that these definitions are provisional; viz.: — when we have no sufficient knowledge of our sensible models, *i.e.* the substantial beings of corporeal nature. This defect also makes us ignorant as to whether we may combine the sensible qualities which nature has not combined, because at bottom we do not understand them.] Now if the signification of the words which serve for the mixed modes is uncertain, for lack of models which show the same composition, that of the names of the substantial beings is uncertain for a wholly contrary reason, because they must signify what is supposed to be conformed to the reality of things, and to be related to the models formed by nature.

Th. I have already more than once remarked in our previous conversations that this is not essential to the ideas of substances; but I admit that ideas made after nature are th surest and most useful.

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[1] *Cf. New Essays*, Bk. III., chap. 6. — Tr.

§ 12. *Ph.* When then we follow the models wholly mad by nature, unless the imagination finds it necessary to retai their representations, the names of substances have in ordi nary use *a double relation,* as I have already shown. Th *first* is that they signify the internal and real constitution o things, but this model cannot be known and consequently car not serve to regulate the significations.

Th. That is not the question here, since we are speaking o ideas of which we have models; the internal essence is in th thing, but we agree that it cannot serve as a pattern.

§ 13. *Ph.* The *second relation* is then that which the name of substances immediately have to the simple ideas, whic exist at the same time in the substance. But as the numbe of these ideas united in one and the same subject is great, me speak of this same subject, forming very different ideas of i both by the different combination of the simple ideas the make and because the greater part of the qualities of bodi are the powers which they have of producing changes other bodies and receiving them; witness the changes one the basest metals is capable of undergoing through the oper tion of fire, and it receives many more yet at the hands of chemist, through the application of other bodies. Further, o is contented with weight and color as criteria for a knowled of gold; another includes ductility, fixedness; and the thi desires to make us take into consideration its solubility aqua regia. § 14. As things likewise often resemble ea other, it is sometimes difficult to designate their preci differences.

Th. As bodies are really liable to be altered, disguise falsified, counterfeited, it is a great point to be able to d tinguish and recognize them. Gold is disguised in solutio but it may be drawn off, either by precipitating it or d tilling the water; and counterfeit or adulterated gold recognized or purified by the art of the assayers, which n being known to everybody, it is not strange that men do n all have the same idea of gold. And ordinarily it is on the experts who have sufficiently just ideas of these ma ters.

§ 15. *Ph.* This variety does not, however, cause so much nfusion in civil intercourse as in philosophic researches.

Th. It would be more tolerable if it had no influence in praccal life where it is often important not to receive a *Qui pro uo*, and consequently to know the characteristics of things or have at hand the class who know them. And it is especially portant as regards drugs and materials which are costly, and which you may have need on important occasions. The ilosophical confusion will manifest itself rather in the use more general terms.

§ 18. *Ph.* The names of *simple ideas* are less liable to equivotion, and we are rarely mistaken as regards the terms white, tter, etc.

Th. It is, however, true that these terms are not wholly empt from uncertainty; and I have already noticed the ample of neighboring colors which are within the confines of vo species and whose species is *doubtful*.

§ 19. *Ph.* After the names of simple ideas, those of the *simple odes* are least doubtful, as for example, those of figures and mbers. But, § 20. the mixed modes and substances cause all e trouble. § 21. Men will say that instead of imputing ese imperfections to the words, we should rather put them the account of our understanding; but I reply that words terpose themselves to such an extent between our mind and e truth of things, that we may compare them with the edium, across which pass the rays from visible objects, and hich often spreads a mist before our eyes; and I have tried think that, if the imperfections of language were more oroughly examined, the majority of the disputes would cease themselves, and the way to knowledge and perhaps to peace ould be more open to men.

Th. I think we could succeed from this time in written dissions, if men would agree upon certain rules and execute em with care. But in order to proceed exactly *viva voce* and once, some change in the language would be necessary. I ve elsewhere[1] entered upon this enquiry.

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[1] In his writings in furtherance of his plan for the establishment of a General aracteristic or Philosophical Language, *Spécieuse générale*, a project which ibnitz had very much at heart, as appears from his frequent allusion to the bject, and upon which throughout his entire life he spent much labor, chiefly

§ 22. *Ph.* While waiting for this reform which will not
ready very soon, this uncertainty regarding words should tea
us to be moderate, especially when it is a question of imposi
upon others the sense attributed by us to the ancient autho
since in the Greek authors it is found that nearly every o
speaks a different language.

Th. I have been rather surprised to see that Greek autho
so distant from one another in time and place, as Home
Herodotus, Strabo, Plutarch, Lucian, Eusebius, Procopiu
Photius, approach so closely, while the Latins have chang
so much, and the Germans, English, and French much mo
But the fact is, the Greeks since Homer's time, and st
more when Athens was in a flourishing condition, had go
authors which posterity has taken as models, at least in wr
ing. For no doubt the common language of the Greeks mu
have been much changed already under the rule of the Roma
And this same reason accounts for the fact that the Itali
has not suffered so great a change as the French, because t
Italians, having had earlier writers of durable reputation, i
tated and moreover esteemed Dante, Petrarch, Boccaccio, a
other authors at a time when those of the French were
longer appreciated.

CHAPTER X

OF THE ABUSE OF WORDS

§ 1. *Ph.* Besides the natural imperfections of langua
there are some that are voluntary and arise from negligence, a
it is an *abuse* of words to use them so badly. The first and m
palpable abuse is, § 2. that we attach no clear idea to them.
these words there are two classes: the first have never h
any definite idea, either in their origin or ordinary use. I
the most part philosophical and religious sects have introdu

preparatory, and with little positive results in accomplishing his plan.
New Essays, Bk. IV. chap. 6, § 2, Th., chap. 17, § 13, Th.; Gerhardt, *Leib*
philos. Schrift., 3, 216; 4, 27 *sq.*, Erdmann, 6 *sq.*; G. 7, 3 *sq.*, E. 82 *sq.*, 669
Trendelenburg, *Ueber Leibniz. Entwurf einer allgemeinen Characteristi*
his *Histor. Beiträge z. Philos.*, vol. 3, pp. 1 *sq.*, Berlin, 1867; L. Neff, *G.*
Leibniz als Sprachforscher und Etymologe, Pt. II., pp. 13 *sq.*, Heidelb
1870–1.— Tr.

iem in order to support some strange opinion, or to conceal ›me weak place in their system. They are, however, distinuishing characters in the mouth of members of the party. 3. There are other words, which in their first and common se have some clear idea, but which have since been approriated to very important matters without attaching to them ny certain idea. In this way the words *wisdom, glory, grace,* re often in the mouths of men.

Th. I believe that insignificant words are less in number ian you think, and that with a little care and good will you an fill up their void or fix their indefiniteness. *Wisdom* ppears to be nothing else than the science of happiness. *Frace* is a favor done to those who do not deserve it and who nd themselves in a state where they need it. And *glory* is he fame of the excellence of some one.

§ 4. *Ph.* I do not wish now to examine whether there is nything to be said in regard to these definitions, but rather to otice the causes of the abuse of words. *In the first place,* we earn the words before we learn the ideas belonging to them, and hildren accustomed thereto from the cradle use them in like ianner during their whole life: the more as they do not cease o make themselves understood in conversation, without ever aving fixed their idea, by using different expressions in order o make others understand their meaning. This, however, often lls their discourses with a quantity of vain sounds, especially a matters concerning morals. Men take the words they find a use among their neighbors, and in order not to appear gnorant of their meaning employ them confidently without iving them a certain sense: and, as in this kind of discourse hey are rarely in the right, they are also rarely convinced hat they are wrong; and to wish to draw them from their rror is to wish to dispossess a vagabond.

Th. Men in fact take so rarely the necessary trouble to nderstand terms or words that I have more than once been stonished that children can learn languages so soon, and that ien furthermore speak them so accurately; a view to which re attach so little in instructing children in their mother ongue and which others think of so little in acquiring clear efinitions; the more so as those we learn in the schools do ot ordinarily concern the words in public use. For the rest, I admit that men frequently happen to be wrong when indee they discuss seriously and speak in accord with their feeling but I have also remarked often enough that in their speculativ discussions upon matters within the province of their min they have every reason for two sides, except in the oppositio they make to each other where they misconstrue another view. This arises from the bad use of terms and sometim also from a spirit of contradiction and affectation of super ority.

§ 5. *Ph.* In the *second place* the use of words is sometim *inconstant*, a practice only too general *among scholars.* It nevertheless a plain cheat, and if voluntary, is folly or malic If any one so conducted himself in his accounts (as to take a X for a V), who, I pray, would have anything to do wit him?

Th. This abuse being so common not only among schola but also in the world at large, I believe that it is due rather t bad custom and inadvertence than to malice. Usually th different significations of the same word have some affinity this makes one pass for another and does not give time to co sider what is said with all the precision that is desirable. W are accustomed to tropes and figures, and some elegance brilliant falsehood easily imposes upon us. For we often seek pleasure, amusement, and appearance, than truth; beside vanity mixes itself therein.

§ 6. *Ph.* *The third abuse* is an affected *obscurity,* either b giving terms in use *unusual meanings,* or by introducing *ne terms* without explaining them. The ancient Sophists, who Lucian ridicules so properly, pretending to speak of ever thing, covered their ignorance under the veil of the obscurit of words. Among the sects of philosophers the Peripatet has shown itself remarkable by this defect; but the oth sects, even among the moderns, are not wholly exempt from i For example, the people who abuse the term *extension,* an find it necessary to confuse it with that of *body.* § 7. Log or the art of discussion, which is held in such high estee has helped to maintain this obscurity. § 8. Those wh have given themselves up to it have been useless or rath detrimental to the state; § 9. while mechanics, though d spised by the learned, have been serviceable to human lif

But these obscure doctors have been admired by the ignorant; nd they have been thought invincible because provided with riers and thorns, into which it was no pleasure to thrust one's elf, their obscurity alone serving as a defence of their absurdty. § 12. The evil is that this art of obscuring words has onfused the great rules of men's action, religion and justice.

Th. Your complaint is largely just: it is nevertheless true hat there are, though rarely, pardonable and even praiseworthy bscurities, as when we profess to be enigmatical, and the *nigma* is timely. Pythagoras[1] so used it, and it is frequently he manner of the Orientals. The alchemists, who are called depts, declare that they wish to be understood only by the *ons of the art.* And that would be well, if these pretended ons of the art had the key to the cipher. A certain obscurity nay be allowed; but something must be concealed which is vorth divining, and the enigma must be decipherable. But *eligion* and *justice* demand clear ideas. It seems that the ittle order brought into their teaching has made the confusion n their doctrine; and the indeterminateness of the terms is erhaps more harmful than their obscurity. Now as *logic* is he art which teaches the order and connection of thoughts, I lo not see any reason for blaming it. On the contrary it is for vant of logic that men deceive themselves.[2]

§ 14. *Ph.* The *fourth abuse* is when we take words for things, *e.* believe that the terms correspond to the real essence of the substances. Who is there brought up in the Peripatetic philosophy who does not think that the ten names which represent the *predicaments* are exactly conformed to the nature of things, that the *substantial forms, vegetative souls, abhorrence of a vacuum, intentional species,* etc., are something real? The Platonists have their *soul of the world,* and the Epicureans the *tendency* of their atoms *towards movement* at the time when they are at rest. If the *aërial or ethereal vehicles*[1] of Dr. More had prevailed in any corner of the world they would have been thought no less real.

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[1] Pythagoras, c. 580–570–c. 500 B.C. The reference is to his so-called Symbols, r sayings preserved in a symbolic form, in order that their meaning might be oncealed from the uninitiated, and the characteristic of which is the union of n ethical prescript with an external action relatively indifferent. *Cf.* Diogeies Laërtius, *De vitis, dogmatibus, et apophthegmatis clarorum philosophorum*, /III, 17 *sq.*, who gives some of these symbols with interpretations of a part of hem; Zeller, *Philos. d. Griec.*, 5th ed., 1892, Vol. 1, p. 324, note 2, 462. Mullach, *ragmt. Philos. Græc.*, Vol. 1, p. 504 *sq.*, gives a collection of these sayings. xamples are: "Carry not the image of God in the finger-ring," "Stir not he fire with the sword," "Sacrifice and pray with bare feet." Göttling, *esammlt. Abhandl.*, Vol. 1, p. 278 *sq.*, 2, 280 *sq.*, has given them a "penerating investigation," on which see the note of Zeller above cited. Leibnitz n Pythagoras, *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 7, 147. — TR.

[2] Leibnitz, while rejecting the over-refinements of the scholastic logic, neverheless rightly values formal logic as an aid to clear thinking and correct easoning. *Cf.* the letter to Gabriel Wagner, 1696, Gerhardt, *Leibniz. philos. chrift.*, 7, 512 *sq.*, Erdmann, 418 *sq.*, Guhrauer, *Leibniz. deutsche Schrift.*, 1, 74 *sq.*, Berlin, 1838. — TR.

Th. Properly speaking this is not to take words for things but to believe that true which is not so, an error too common with all men, depending not alone upon the abuse of words but consisting in something entirely different. The design of the *predicaments* is a very useful one, and we ought to think of rectifying rather than of rejecting them. Substances, quantities, qualities, actions or passions, and relations, *i.e.* five general names of things may, together with those formed by their composition, suffice, and have not you yourself, in marshalling ideas, been willing to grant them as the predicaments? I have spoken above of *substantial forms.*[2] And I know no whether we have sufficient reason for rejecting the *vegetativ souls,*[3] since persons of much experience and judgment recog ize a great analogy between plants and animals, and you, sir, ave appeared to admit animal souls. *Abhorrence of a vacuum* ıay be soundly understood; *i.e.* supposing nature has once lled space, and that bodies are impenetrable and non-condens- ole, she could not admit any vacuum; and I consider these ıree suppositions well grounded. But the *intentional species*,[1] hich are to make the connection between the soul and the ody, are not so, though we may excuse the *sensible species*,[1] which proceed from the object to the distant organ, meanin thereby the propagation of motion. I admit that there is n Platonic *soul of the world*, for God is beyond the world, *extra mundana intelligentia*, or rather *supramundana*.[1] I know no whether by *the tendency to movement* of the Epicurean atom you understand the weight attributed to them, no doubt wit reason, since they maintain that bodies all move of themselves in one and the same direction. The late Henry More, theologian of the English Church, wholly clever as he wa showed himself a little too ready to invent hypotheses whic were neither intelligible nor apparent; witness his *Hylarchi principle*[2] of matter, a cause of weight, elasticity, and othe wonders which are met with. I have nothing to say of thes ethereal vehicles, having never examined their nature.

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[1] The *aërial or ethereal vehicles* are the aërial or celestial bodies of th spirits, which, according to More, the souls of men after sufficient purificatio attain, either at death, in the case of a very few of the noblest and mos heroic, or at some period after death. *Cf.* H. More, *Opera omnia*, Londin 1679, 2 vols., fol.; *Tract. de immortalitate animæ*, Bk. III. chap. 1, *Axioma*, 2 §§ 3, 28 *sq.*, Vol. 2, p. 396 *sq.*, chap. 11, § 2, p. 427; *Antidotus adversus Athei mum*, Bk. III. chap. 3, § 9, Vol. 2, p. 99.—Tr.

[2] *Cf. ante*, p. 349 and note.—Tr.

[3] The scholastic philosophy recognized three forms or kinds of souls, corr sponding to the three orders of life, plants, animals, and men, viz.: the *veg tative, sensitive,* and *intellective* (*anima vegetabilis* or *nutritiva, sensibilis* (*sensitiva, intellectiva* or *rationalis*). Of these the vegetative is the lowes the sensitive the next higher, the intellective the highest; and the high form includes potentially in itself the lower and subordinate form and i functions. The functions of the vegetative soul are nutrition, growth, repr duction; of the sensitive soul, sensation, feeling, perceptional, appetitive ai emotional activity; of the intellective, those of the reason and the will. man, these several functions are all united in the intellective or rational sou which he alone possesses, and which comprises within itself the sensitive ai vegetative souls. *Cf.* Stöckl, *Gesch. d. Philos. d. Mittelalters*, II. 2 [Vol. 592 *sq.*, 618 *sq.*, 633 *sq.*—Tr.

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[1] *Cf.* 5th letter of Leibnitz to Clarke, § 84, Gerhardt, 7, 410, Erdmann, 773, Jacques, 2, 465, Dutens, 2, Pt. I, 161, trans. Duncan, 275.

The doctrine of the *intentional species* (*species intentionales*) to which ere opposed the *real species* (*species reales*) or the actual forms of things, rose in the attempts of the Mediæval Schoolmen to explain the process and ıilosophy of sense-perception and cognition. Two views have in general been eld concerning their nature: 1. That they were the forms, similitudes, or ıages (*formæ, similitudines, simulacra*) of external objects, different both om the mind and from these objects, the intermediate and vicarious repre- ntatives of these objects in perception and thought, the media through hich the mind infers and comes to know these external objects — a form of ıe doctrine of mediate perception. 2. That they were modifications of the ind itself, occasioned by the action upon the mind of the external object and ıe mind's responsive reaction thereto, by which the mind is likened or con- ormed to the given object and so determined immediately to cognize it. he latter view is maintained by the Roman Catholic psychologists, as being ıe doctrine of the greatest of the schoolmen, such as Albertus Magnus, homas Aquinas, Duns Scotus, and as giving the real meaning of the terms ıey use. It is the more correct interpretation.

The intentional species, according as they affected or were modifications of ıe sense or the intellect, were divided into *sensible species* (*species sensibiles*) nd *intelligible or intellectual species* (*species intelligibiles vel intellectuales*). oth the *sensible* and the *intelligible species* were further distinguished as *npressed species* (*species impressa*) and *expressed species* (*species expressa*). ccording to the representative theory of the *intentional species*, the *species npressa* was the vicarious existence emitted by the object, impressed on the articular faculty, and concurring with it in its operation; while the *species xpressa* was the actual operation elicited by the faculty and the impressed pecies conjointly, *i.e.* the sensations and intellections. The direct or imme- iate theory regarded the genesis of *species*, whether as *sensible* or *intelligible*, s exhibiting two stages: 1. In sensuous cognition, (a) the *species sensibilis npressa*, or "the modification of the sensuous faculty viewed as an impres- ion wrought in the mind by the action of the object," and (b) the *species ensibilis expressa*, or "the reaction of the mind as an act of cognitive con- ciousness." 2. In intellectual cognition, (a) the *species intelligibilis im- ressa*, or the "modification effected in the recipient capacity" of the *ntellectus patiens vel possibilis* (the *passive* intellect — Aristotle's νοῦς παθητι- ός), and (b) the *species intelligibilis expressa*, or the "mental modification eflecting the essence of the object, and by means of which the object is ap- rehended," a modification due to the act of the *intellectus agens* (the *active* ntellect — Aristotle's νοῦς ποιητικός).

§ 15. *Ph.* An example touching the word matter will assis you the better to enter into my thought. Matter is taken a

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The doctrine of the *intentional species* was held by the Realists, Aquina Duns Scotus, and others. The Nominalists, especially Durandus, Biel, an Occam, rejected it, and the doctrine was exploded in the seventeenth centur largely by the arguments of Gassendi, Hobbes, and Descartes. On the who subject, *cf.* Hamilton's *Reid*, 8th ed., Edinburgh, 1880, Vol. 1, p. 267 *sq.*, an Note M., Vol. 2, p. 951 *sq.; Lects. on Metaphys.*, Boston, 1875, p. 291 *sq.*, an notes; Stöckl, *Gesch. d. Philos. d. Mittelalters*, II. 1 [Vol. 2] 463 *sq.*, II. [Vol. 3] 808, 965, 978, 991 *sq.*, III. [Vol. 4] 634 *sq.;* Hauréau, *Histoire de philos. scolastique*, II. 1 [Vol. 2] 417 *sq.*, II. 2 [Vol. 3] 247 *sq.*, 378 *sq.;* Prant *Gesch. d. Logik im Abendlande*, Vol. 3, pp. 113, 210 *sq.*, 294, 335 *sq.;* Mahe S. J., *Psychology* (Manuals of Catholic Philosophy — Stonyhurst Series), p 49–53, 290–297, London: Longmans, Green & Co., 1890; Zigliara, *Summ Philosophica*, 3d ed., Lugduni, 1880, Vol. 2, pp. 243–4, 260 *sq.;* Suarez, *I Anima*, Lib. III. cc. 2, 3; Kleutgen, *Philos. d. Vorzeit*, §§ 18–52; Sanseverin *Dynamilogia*, Neapoli, 1862–66, Vol. 1, pp. 373–403 (of which pp. 390–4 contain "an effective refutation of the charge of representationism again St. Thomas and the leading scholastics, based on the doctrine of *species*" Vol. 2, pp. 586 *sq.* — Tr.

[1] *Cf. Théodicée*, Pt. II. § 217, Gerhardt, 6, 248, Erdmann, 571, a, Jacques, 205. — Tr.

[2] *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 7, 339; letter to Placcius, Sept. 1690, Dutens, *Leibnit. op. om.*, 6, 48; to T. Burnett, Aug. 24 (v.s.) 1697, G. 217, D. 6, 263. More rejected the mechanical explanation of physical natu and adopted the *principium hylarchicum*, or *spiritus naturæ* as he designat it, the immaterial force in all nature, the principle of the movement a sympathy of beings, similar to the *anima mundi* of the Platonists and t *archæus* (*cf. ante*, p. 67, note 3) of the Alchemists. *Cf.* H. More, *Opera omni* Londini, 1679, *Enchiridion metaphys.*, especially in the Scholia, to chap. § 4, Vol. 1, p. 222 *sq.;* also *Tract. de immortalitate animæ*, Bk. III. chap. Vol. 2, p. 430. — Tr.

an entity really existing in nature, distinct from the body; which indeed is thoroughly self-evident; otherwise these two ideas might be put indifferently the one in the place of the other. For we may say that *one single matter composes all bodies,* but not that a single body composes all matter. Neither will we say, I think, that one matter is greater than another. Matter expresses the substance and solidity of body; thus we no more conceive different matters than different solidities. But since matter has been taken as a name of something existing under this determination, this thought has produced unintelligible discourse and confused discussion upon *materia prima.*

Th. This example appears to me to serve rather to excuse than to blame the Peripatetic philosophy. If all silver were figured, or rather because all silver is figured by nature or art, is it less allowable to say that silver is an entity really existing in nature, distinct (taking it in its *precision*) from the plate or the money? You will not on that account say that silver is nothing else than certain qualities of money. Thus it is not so useless as you suppose to reason in general physics about *materia prima* and to determine its nature in order to know whether it is always uniform, whether it has some other property besides impenetrability (as I in fact have shown[1] after Kepler that it also has what may be called *inertia*), etc., although it is never found wholly pure; as it would be allowable to reason about pure silver, although we had none with us nor the means of purifying it. I do not at all disapprove what Aristotle has said about *materia prima;*[2] but one cannot help blaming those who have stopped too soon and have conjured up chimeras out of the ill-understood words of this philosopher, who perhaps also has given too much occasion sometimes for this misconception and nonsense. But we should not exaggerate so much the defects of this celebrated author, because we know that many of his works were not completed or published by himself.

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[1] *Cf. De ipsa natura*, 1698, § 11, Gerhardt, *Leibniz. philos. Schrift.*, 4, 510, Erdmann, 157, a, Jacques, 1, 462 (in French), Dutens, 2, Pt. II., 54, trans. Duncan, 119; *Théodicée*, Pt. I., § 30, G. 6, 119, E. 512, a, J. 2, 89, Dutens, 1, 141 (in Latin); *Specimen dynamicum*, 1695, Pt. I., Gerhardt, *Leibniz. math. Schrift.*, 6, 234 *sq.*, Dutens, 3, 315 *sq.*, trans. Appendix, 670 *sq.*; G. *Leibniz. philos. Schrift.*, 4, 464–7, Dutens, 2, Pt. I., 234–7, two letters to the editor of the "Journal des Savans," in the numbers for June 18th, 1691, January, 1693, the first originally a fragment from a letter to Antonio Alberti, G. 7, 447–9; 5th letter to Clarke, § 102, G. 7, 414, E. 775, b, J. 2, 470, Dutens, 2, 165, trans. Duncan, 280. In the letter to Jac. Thomasius, April 20–30, 1669 (*cf.* G. 1, 17, 18, 24), Leibnitz affirmed that matter consisted of extension and inpenetrability only. — TR.

[2] *Cf.* Zeller, *Philos. d. Griech.*, 3d ed., 1879, II. 2 [Vol. 4], p. 320, note 2; and Bonitz, *Ind. Arist. sub voc.* ὕλη, in vol. 5 of Berlin Academy, ed. of Aristotle. *Cf.* also Gerhardt, *Leibniz. philos. Schrift.*, 7, 259. — TR.

§ 17. *Ph.* The *fifth abuse* is the putting of words in the place of things which they do not and cannot in any way signify. It occurs when by the names of substances we mean to say something more than this: what I call gold is malleable (although at bottom then gold signifies nothing else than what is malleable), intending to have it understood that malleability depends upon the real essence of gold. Thus we say that it is right to define man with Aristotle as a reasonable animal; and that it is not right to define him with Plato as a two-legged animal without feathers and with broad nails. § 18. There is scarcely any one who does not suppose that these words signify a thing having a real essence upon which these properties depend; but it is a plain abuse when the complex idea signified by this word does not include this thing.

Th. For myself I should rather think that we are plainly wrong in censuring this common usage, since it is very true that in the complex idea of gold is included the thought that it is a thing having a real essence, whose constitution is unknown to us in detail otherwise than that upon it depend such qualities as malleability. But in order to express its malleability without identity and without the defect of *coccysm* or repetition (see chap. 8, § 18),[1] we must recognize this thing by other qualities, as color and weight. And it is as if we said that a certain fusible body, yellow and very heavy, called gold, has a nature which gives it besides the quality of being very soft to the hammer and capable of being made very thin. As for the *definition of man* attributed to Plato, which he appears to have made only for practice, and which you would not, I think, compare seriously with that which is received, it is manifestly a little too external and provisional; for if this *Cassowary*, of which you recently spoke (chap. 6, § 34), had been found to have wide nails, it would be man; for it would not have been necessary to strip it of its feathers, as in the case of the cock which Diogenes, as they say, wished to make a Platonic man.[1]

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[1] The reference is incorrect. Perhaps chap. 6, § 18, is meant, or chap. 10, § 18. — Tr.

§ 19. *Ph.* In the mixed modes, as soon as an idea entering therein is changed, you at once recognize it as another thing, as plainly appears in the words, *murder*, which signifies in English (as *Mordt* in German), homicide premeditated with design; *manslaughter* (a word corresponding in origin to homicide), a voluntary but not premeditated homicide; *chance-medley* (a chance melée, according to the force of the word), homicide committed without design; for what is expressed by the names and what I think to be in the thing (which I called before *nominal essence* and *real essence*) is the same. But it is not so in the names of substances; for if one puts into the idea of gold what another leaves out, for example fixedness and solubility in aqua regia, men do not think for that reason that its species has been changed, but only that the one has a more perfect idea than the other of what constitutes the real concealed essence to which the name of gold is given, although this secret relation is useless and serves only to involve us in difficulties.

Th. I think I have already made this statement; but I am going also to show you clearly here, that what you, sir, have just said, is found in the modes, as in the substances, and that we have no ground for censuring the internal essence for this relation. Here is an example: we may define a parabola, in the sense of the geometers, as a figure in which all the lines parallel to a certain straight line are united by thought in a certain point or *focus*. But it is rather the *exterior* and the *effect* which is expressed by this idea or definition, than the *internal essence* of this figure or what can at once make known its *origin*. We may at the beginning even doubt if such a figure as we wish and which ought to produce this effect is a *possible* thing; and it is this which with me shows whether a definition is only nominal and taken from the properties, or whether it is also *real.* But he who mentions the parabola and knows it only by the definition I have just spoken of, ceases not, when speaking of it, to understand a figure which has a certain construction and constitution unknown to him, but which he wishes to learn in order to be able to draw it. Another who has examined it more thoroughly will add some other property, and will discover, for example, that in the figure asked for, the portion of the axis intercepted between the ordinate and the perpendicular drawn to the same point of the curve is always constant, and equal to the distance from the *vertex* to the focus. He will thus have a more perfect idea than the former, and will come more easily to the drawing of the figure, although he is not yet there. And, moreover, we shall agree that it is the same figure, the constitution of which is still concealed. You see then, sir, that all that you have found and partly censured in the use of words signifying substances is also found and found plainly justified in the words signifying the mixed modes. But what has made you think that there was some difference between the substances and the modes,[1] is merely the fact that you have not consulted here the intellectual modes difficult of discussion, which are found to resemble in all this bodies which are still more difficult to know.

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[1] *Cf.* Diogenes Laërtius, c. 230–250, *De vitis, dogmatibus et apophthegmatis clarorum philosophorum lib. decem*, VI. 40: Πλάτωνος ὁρισαμένου, Ἄνθρωπος ἐστὶ ζῶον δίπουν, ἄπτερον, καὶ εὐδοκιμοῦντος, τίλας [Διογένης ὁ κύων] ἀλεκτρυόνα εἰσήνεγκεν εἰς τὴν σχολὴν αὐτοῦ, καί φησιν, Οὗτός ἐστιν ὁ Πλάτωνος ἄνθρωπος. ὅθεν τῷ ὅρῳ προσετέθη Τὸ πλατυώνυχον. The *definitions* ascribed to Plato, and found in some editions of his works, are beyond doubt spurious. — Tr.

§ 20. *Ph.* Thus I fear I must suppress what I wished to say to you, sir, of the cause of what I have thought an abuse, as if it were because we falsely think that nature always acts with regularity and fixes limits to each species by this specific essence or internal constitution which we there understand and which always follows the same specific name.

Th. You see clearly then, sir, by the example of the geometrical modes, that we are not wrong in referring them to internal and specific essences, although there is great difference between sensible things, whether substances, or modes, of which we have only nominal provisional definitions, and of which we do not readily hope for real ones, and between the intellectual modes, difficult of discussion since we can at last reach the internal constitution of the geometrical figures.

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[1] Jacques reads: "c'est que vous n'avez point consulté," etc. Gerhardt and Erdmann read: "n'est que vous," etc. — TR.

§ 21. *Ph.* [I see at last that I should have been wrong in aying the blame of this relation upon the essences and internal onstitutions, under the pretext that this would render our vords signs of nothing or of an unknown something. For vhat is unknown in certain respects may make itself known n another way, and the inner nature may partly reveal itself y the phenomena which spring from it. And as for the uestion: whether a *monstrous fœtus* is a man or not? I see hat, if it cannot be decided at once, this fact does not prevent he species from being well fixed in itself, our ignorance owise changing anything in the nature of things.]

Th. In fact, some very clever geometers have chanced to ossess insufficient knowledge as to what the figures were, nany qualities of which seemingly exhaustive of the subject hey knew. For example, there were some lines called *pearls*,[1] f which there were given indeed the quadratures and the neasure of their surfaces and of the solids made by their evolution, before it was known that they were only a composition of certain cubic paraboloids. Thus in considering eforehand these pearls as a particular species, they had only rovisional knowledge of them. If this may happen in geometry, do you wonder that it is difficult to determine the species f corporeal nature which are incomparably more complex?

§ 22. *Ph.* Let us pass to the *sixth abuse* in order to continue the enumeration begun, although I see clearly that some f the points must be struck from the list. This general but ittle noticed abuse is this: men having by long use attached ertain ideas to certain words, imagine that this connection is nanifest and that everybody agrees to it. Whence it comes hat they feel very strange, when asked the meaning of the vords they employ, when indeed the question is an absolutely ecessary one. There are few people who do not take it as an affront if asked what they mean when speaking of *life*. Bu the vague idea they may have of it is insufficient when th question arises as to the knowledge whether a plant, alread formed in the seed, or a pullet in the egg not yet in proces of incubation, or a man in a swoon without sense or motion has life. And although men do not wish to appear so littl *intelligent* or so *obtrusive* as to find it necessary to ask for a explanation of the terms used, nor *critics* so disagreeable as t censure others unceasingly for the use they make of words nevertheless when it is a question of exact research, suc explication is necessary. Often scholars of different partie in the reasonings they display the one against the othe merely speak different languages and think the same thing although perhaps their interests are different.

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[1] *Cf. New Essays*, Bk. IV., chap. 7, § 4, Th. *infra*, p. 465. René François Valter de Sluse, 1622–1685, a Flemish geometer, canon of Liege cathedral, and uthor of the method for the construction of the roots of equations of the 3d nd 4th degree, "which consists in reducing the resolution of the proposed quation to that of the system of two equations representing two conics, by ntroducing an unknown auxiliary whose elimination reproduces the primitive quation." He developed this method in his *Mesolabium et problemata solida*, tc., 4to, Leodii Eburonum, 1668. Leibnitz mentions this work in a letter to obbes, 13–22 July, 1670, Gerhardt, *Leibniz. philos. Schrift.*, 7, 573. — Tr.

Th. I think I have explained sufficiently my views upo the *notion of life*, which must always be accompanied by perception in the soul; otherwise it would be only an appearance as the life which the American savages attributed to watche or clocks, or which those magistrates attributed to the marionettes, who believed them animated by demons, when the desired to punish as a sorcerer the one who had first presented this spectacle in their city.

§ 23. *Ph.* In conclusion, words serve (1) to make ou thoughts understood, (2) to do this easily, and (3) to furnis entrance into the knowledge of things. Words fail at th first point, when they have no definite and constant ide either received or understood by others. § 23. They fail i facility, when they have very complex ideas, without distinc names; this is often the fault of the languages themselve which have no names; often also of the man who is ignoran of them; in that case extensive paraphrases are necessary § 24. But when the ideas signified by the words do not agre with what is real, they fail in the third point. § 26. (1) H who has terms without ideas is like a man who has only catalogue of books. § 27. (2) He who has very complex idea is like a man who has a quantity of books in loose sheet without titles, and who could not give the book save by givin the sheets in succession. § 28. (3) He who is not constan in the use of signs is like a merchant who sells different good under the same name. § 29. (4) He who attaches particula leas to received words cannot enlighten others by the light he nay have. § 30. (5) He who has in his head ideas of subtances which never had existence, cannot advance in real nowledge. § 33. The first will speak in vain of the taranula or of charity. The second will see new animals without eing able easily to show them to others. The third will ake body sometimes as a solid, sometimes as a mere extenion; and by frugality he will designate sometimes the virtue, ometimes the kindred vice. The fourth will call a mule y the name horse, and what everybody calls prodigal will be o him generous; and the fifth will seek in Tartary on the uthority of Herodotus[1] a nation composed of men having only ne eye. I remark that the first four defects are common to he names of substances and modes, but that the last is pecuiar to substances.

Th. Your remarks are very instructive. I will only add hat you seem to have something chimerical still in your ideas f the accidents or forms of being; and so the fifth defect is lso common to substances and to accidents. The *extravagant hepherd* was not so, only because he believed there were ymphs concealed in the trees, but also because he always xpected romantic adventures.

§ 34. *Ph.* I had thought to conclude, but I remember the *eventh and last abuse*, which is that of figurative terms or llusions. But there will be difficulty in thinking it an abuse, ecause what is called wit and imagination is better received han truth wholly dry. It goes well in discourse where you nly seek to please; but at bottom, order and clearness exepted, all the art of rhetoric, all these artificial and figuraive applications of words, serve only to insinuate false ideas, o excite the passions and seduce the judgment, so that they re nothing but pure frauds. Nevertheless this fallacious art s given the first rank and rewards. It is evident that men are but little for truth and much prefer to deceive and to be eceived. This is so true that I doubt not that what I have ust said against this art is regarded as the result of an extreme udacity. For eloquence, like the fair sex, has charms too owerful to allow itself to be opposed.

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[1] Book III., chap. 116; IV., chaps. 13, 27; *cf.* also Æschylus, *Prometheus*, 823 304, Dindorf), 3d ed., F. A. Paley, London, 1870; Pausanius, 1, 24, 6. — Tr.

Th. Very far from censuring your zeal for the truth, find it just. And would that it might be effective. I d not wholly despair of it, because you seem to me, sir, to comba eloquence with its own weapons, and to have an eloquence o another species superior to this deceptive kind, as there was Venus Urania, mother of divine love, before whom this othe bastard Venus, mother of a blind love, dared not appear wit her child with eyes blinded.[1] But that indeed proves tha your thesis needs some moderation, and that certain adornments of eloquence are like the Egyptian vases which yo could use in the worship of the true God. It is as in paintin and music, which are abused, one of which often represent grotesque and even hurtful imaginations, and the other soften the heart, and the two amuse in vain; but they can be usefull employed, the one to render the truth clear, the other to mak it effective, and this last result must be also that of poetr which contains rhetoric and music.

CHAPTER XI

OF THE REMEDIES WHICH MAY BE APPLIED TO THE IMPERFECTIONS AND ABUSES JUST SPOKEN OF

§ 1. *Ph.* This is not the place to plunge into this discussio upon the use of a true eloquence, and still less to reply to you obliging compliment, since we ought to think of bringing thi matter of *words* to an end, by seeking the remedies for th imperfections we have noticed therein. § 2. It would be ridiculous to attempt to reform the languages, and to desire to compel men to speak only according to the measure of their knowledge. § 3. But it is not too much to desire that philosopher speak exactly, when the question concerns a serious search fo the truth: without this all will be full of error, opiniativeness and vain disputes. § 8. The *first remedy* is to use no wor

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[1] For the myth here referred to by Leibnitz, *cf.* Plato, *Symposium*, 180, D Jowett's trans. Vol. 2, p. 32, 2d ed., 1875, Vol. 1, p. 550, 3d ed., 1892; Pausanias, 9, 16, 3; also Harrison-Verrall, *Mythology and Monuments of Ancien Athens*, 212 *sq.*, London, Macmillan & Co., 1890; Preller, *Griech. Mythol.*, 2 ed., 1860, Vol. 1, p. 265. — Tr.

hout attaching thereto an idea, instead of frequently em-
ying words like instinct, sympathy, antipathy, without
aching any sense to them.
Th. The rule is good; but I know not whether the examples
pertinent. Everybody seems to understand by *instinct* an
lination of an animal to what is proper for it, without on
t account apprehending its reason; and men indeed ought
s to neglect these instincts, which they discover moreover
themselves, although their artificial method of living has
the most part nearly effaced them; the physician of his
n accord, indeed, has carefully observed it. *Sympathy* or
tipathy signifies that which in bodies destitute of feeling
responds to the instinct for union or separation found in
imals. And although we have no such knowledge of the
use of these inclinations or tendencies, as is to be desired,
nevertheless have a notion of them sufficient to discourse of
m intelligibly.
§ 9. *Ph.* The *second remedy* is that the ideas of the names
the modes at least be determined and, § 10. that the ideas
the names of substances be more conformed to what exists.
any one says that *justice* is conduct conformed to the law
ating to the good of another, this idea is not sufficiently
ermined, so long as we have no distinct idea of that which
called *law*.
Th. We might say here that the *law* is a precept of wisdom
of the science of happiness.
§ 11. *Ph.* The *third remedy* is to employ terms so far as
ssible in conformity with received usage. § 12. The *fourth*
to declare in what sense we take the words, whether we
n new ones or employ the old in a new sense, (or)
ether we find that use has not sufficiently fixed their mean-
g. § 13. But there is some difference. § 14. The words for
aple ideas which cannot be defined, are explained by synony-
ous words, when they are better known, or by showing the
ing. It is by these means that we can make a peasant un-
rstand what the color *feuille morte* is, by telling him that it is
at of dry leaves which fall in the autumn. § 15. The names
the mixed modes should be explained by definition, for that is
ssible. § 16. It is upon this ground that ethics is suscepti-
e of demonstration. We shall take man as a corporeal

rational being without troubling ourselves about his exter
figure, § 17. for it is by means of definitions that the matt
of morality may be clearly treated. We shall rather defi
justice according to the idea we have in our mind th
seek a model therefor outside of us, as Aristides, and fo
it thereupon. § 18. And as the majority of the mix
modes nowhere exist together, we can fix them in defini
them only by the enumeration of that which is scatter
§ 19. In substances there are ordinarily some *directing*
characteristic qualities which we consider as the most disti
tive idea of the species, to which we suppose the other ide
forming the complex idea of the species are attached. It
form in vegetables and animals, and color in animate bodi
and in some color and form together. This is why, § 20. t
definition of man given by Plato is more characteristic th
that of Aristotle; or why we should not cause the death
monstrous productions, § 21. and often sight avails as mu
as any other test; for persons accustomed to test gold oft
distinguish by sight the true from the false, the pure fr
that which has been adulterated.

Th. Everything doubtless returns to the definitions whi
may extend even to primitive ideas. One and the same su-
ject may have several definitions, but the knowledge that th
agree with themselves, must be learned by reason, by dem
strating one definition by another, or by experience, by provi
that they constantly go together. As for morality, one part
wholly grounded in reason; but there is another dependi
upon experience and related to the disposition. For a kno
edge of substances, form and color, *i.e.* the visible, gives
the first ideas, because it is by these that we know thin
at a distance; but they are ordinarily too provisional, and
things of importance to us we try to know substance mo
closely. I am astonished, moreover, that you return again
the definition of *man*, attributed to Plato, since you have ju
yourself stated, § 16. that in morals man must be taken as
corporeal rational being without troubling ourselves about t
external form. For the rest it is true that a large practice do
much for discerning at sight what another may scarcely kn
through arduous experiments. And physicians of large expe
ence, with very good sight and memory, often know at the fi

earance the disease which another will draw out for himself h difficulty by force of questioning and trying the pulse. t it is well to unite all the indications we may have.

§ 22. *Ph.* I admit that he to whom a good assayer makes own all the qualities of gold, will have a better knowledge them than sight could give. But if we could learn its in- nal constitution, the meaning of the word *gold* would be as *ily* determined as that of the triangle.

Th. It would be wholly as determined, and it would have in no *provisional* element; but it would not be so easily deter- ned. For I think a distinction a little prolix would be essary in order to explain the contexture of gold, as is the e indeed in geometry with figures whose definition is long.

§ 23. *Ph.* Spirits separated from bodies have doubtless owledge more perfect than ours, although we have no notion the manner in which they may acquire it. But they may ve as clear ideas of the radical constitution of bodies, as we ve of a triangle.

Th. I have already remarked, sir, that I have reasons for nking that no created spirits exist entirely separate from lies; but there are no doubt some whose organs and under- nding are incomparably more perfect than ours, and which pass us in every kind of conception, as much and more than . Frenicle,[1] or that Swedish boy of whom I have spoken to u, surpassed the common run of men in the calculation of mbers, made by imagination.

§ 24. *Ph.* We have already noticed that the definitions of stances which may serve in explaining names are imperfect relation to the knowledge of things. For usually we put the name in the place of the thing; then the name says mo than the definitions; thus to give a good definition of su stances, we must study natural history.

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[1] *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 4, 319. Bernard Frénicle de Bessy, 605–1675, brother of the poet Nicolas Frénicle, 1600–1661, "conseiller à la r des monnaies," member of the Paris Academy of Sciences, who acquired reputation of being the first arithmetician of his age by the rapidity with ich he solved the most complicated numerical problems, and by his ingen- s researches upon the solution in whole numbers of indeterminate equations. method, known as the *method of exclusions*, appears to have been an inge- us groping, but based on some general propositions which greatly restricted groping, and which have since been rigorously demonstrated by Léonard ler, 1707–1783 and Jos. Louis Lagrange, 1736–1813. Pierre de Fermat, 1601– 5, and Descartes, 1596–1650, greatly admired his work, astonished that he ld go so far without the aid of algebra and that his arithmetic could con- t him where analysis finds so much difficulty in going. His principal work s, *Traité des triangles, rectangles en nombre*, Paris, 1676. — Tr.

Th. You see then, sir, that the name gold, for examp signifies not only that which he who pronounces it knows it, — for example, something yellow, very heavy, — but al what he does not know, and which another may know, *i.e.* body endowed with an internal constitution from which pr ceed color and weight, and from which spring still other pro erties admitted to be better known by experts.

§ 25. *Ph.* It were now to be wished that those practised physical researches would set down the simple ideas in whi they observe that the individuals of each species constant agree. But the composition of a dictionary of this kin which would contain, so to speak, a natural history, would quire too many persons, too much time, trouble, and sagaci for such a work ever to be hoped for. It would be well, ho ever, to accompany words with small copper-plate engravin of things known by their external form. Such a dictiona would be of much service to posterity and would spare futu critics much trouble. Small figures as of the celery-pla (*apium*), of a *Bouquetin* (*ibex*, a kind of wild goat), would more valuable than long descriptions of this plant or of th animal. And in order to know what the Latins called *strigi* and *sistrum*, *tunica* and *pallium*, figures in the margin would incomparably more valuable than the pretended synonym currycomb, cymbal, dress, cloak, mantle, which show but litt of them. For the rest I shall not stop upon the seventh reme of the abuse of words which is to employ constantly the sa term in the same sense, or to give notice when you change For we have spoken sufficiently of this subject.

Th. Rev. Father Grimaldi,[1] President of the Mathematic ociety at Pekin, tells me that the Chinese have illustrated ictionaries. There is a small nomenclator printed at Nuremerg in which there are such figures for each word which are ood enough. Such an illustrated *universal dictionary* were to e desired, and would not be very difficult to make. As for the *escription of species*, it is properly natural history, and we re working at it by degrees. Were it not for the wars which have troubled Europe since the first foundation of the ocieties or Royal Academies) it would be farther advanced, nd already in a condition to profit from our labors; but the reat for the most part do not recognize its importance, nor hat good they deprive themselves of by neglecting the adancement of solid knowledge; and besides they are ordinarily o much indisposed by the pleasures of peace or by the cares f war to weigh things which do not strike them at once.

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[1] Claudius Philip Grimaldi, with whom Leibnitz became acquainted duri his stay in Rome in 1689, and with whom he corresponded, receiving from h after his return to Pekin much interesting information. *Cf.* Guhrauer, *G. Freiherr v. Leibniz*, 2, 95 *sq.*; Kuno Fischer, *Gesch. d. n. Philos.*, Vol. 2, p. 2 3d ed., Heidelberg, 1889; Dutens, *Leibniz. op. om.*, 4, Pt. I. 81, 83 *sq.*, 88; 106, 128, 227, Gerhardt, *Leibniz. philos. Schrift.* 3, 166, 174. Schaarschm states that such dictionaries as Leibnitz here mentions on the authority Grimaldi exist in fact among the Chinese, and have been brought to Euro that the Bonn University library possesses a couple of parts of one s dictionary, and that it must be regarded as an alphabetically arranged *or pictus.* — Tr.

ESSAY ON UNDERSTANDING

Book IV. — Of Knowledge

CHAPTER I

OF KNOWLEDGE IN GENERAL

§ 1. *Ph.* Hitherto we have spoken of *ideas* and of *words* hich represent them; let us come now to the *knowledge,* hich the ideas furnish, for it rests only upon our ideas. 2. *Knowledge* is simply the perception of the connection ıd agreement, or of the opposition and disagreement, which e find between *two of our ideas.* Whether we imagine, con- cture, or believe, it is always that. We perceive, for exam- ie, by this means, that white is not black, and that the ıgles of a triangle and their equality to two right angles ıve a necessary connection.

Th. Knowledge has a still more general signification, so ıat we find it also in ideas or terms, before we reach proposi- ons or truths. And it may be said that he who has atten- vely looked at more pictures of plants and animals, more agrams of machines, more descriptions or representations of ouses or fortresses, who has read more ingenious romances, eard more curious narratives, this one, I say, will have more ıowledge than another, even though there should not be a ord of truth in all that which was portrayed or related to m; for the custom he has of representing in his mind many xpress and actual conceptions or ideas, renders him more fit conceive what is placed before him; and it is certain that will be better instructed and more capable than another ho has neither seen nor read nor heard anything, provided that in these stories and representations he takes nothing as true which is not so and that these impressions do not prevent him elsewhere from distinguishing the real from the imaginary, or the existent from the possible. This is why certain logicians of the period of the Reformation who were in some measure of the party of the Ramists,[1] were not wrong in saying that the *topics* or orders of invention (*argumenta*, as they call them) serve as much for the explication or very detailed description of an *incomplex theme, i.e.* of a thing or idea, as for the proof of a *complex theme, i.e.* of a thesis, proposition, or truth. And indeed a thesis may be explained, in order that its sense and force may be well known, without raising the question of its truth or proof, as is seen in sermons and homilies explaining certain passages of Holy Scripture, or in instruction or lectures upon certain texts of civil or canon law whose truth is presupposed. We can even say that there are some themes which are means between an idea and a proposition. These are the *questions*, some of which demand only yes or no; and they are the nearest to propositions. But there are some also which demand the how, the circumstances, etc., where there is more to be supplied in order to make propositions. It is true, it may be said, that in descriptions[2] (even of things purely ideal) there is a tacit affirmation of possibility. But it is also true that, as we may undertake the explanation and proof of a falsehood, a method which sometimes serves as its best refutation, the art of description may fall upon the impossible also. Something like this is found in the *novelle* of the Count of Scandiano followed by Ariosto,[3] and in the

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[1] The Ramists were disciples of Peter Ramus (*cf. infra* p. 408, note 1). Schaarschmidt states that Leibnitz probably has in mind chiefly J. H. Alsted, whom he has previously (*cf. ante*, pp. 311, note 2, 362) cited, and whom he greatly prized and studied, in whose *Systema logicæ harmonicum*, Herborniae, 1614, p. 69, the *argumentum* is divided into *argumentum simplex* (which Leibnitz calls *thème incomplexe*) and into *argumentum complexum*. The former, according to Alsted, is a "terminus extra omnem dispositionem dirigens materiam" (Leibnitz says: "une chose ou idée"), the latter is a "definitio et distributio" (Leibnitz says: "une thèse, proposition ou vérité"). *Cf.* Alsted, p. 261. — Tr.

[2] *I.e.* in the sense of nominal definitions, which allow the really impossible. *Cf. ante*, p. 317, note 3. — Tr.

[3] Leibnitz here refers to Matteo Maria Boiardo, c. 1434–1494, Count of Scandiano, and the author of *Orlando Innamorato*, which a recent writer calls "the most chivalrous poem of the Renaissance," and "a masterpiece of

Amadis of Gaul"[1] or other old romances, in the fairy-stories hich were again in fashion some years since, in the "True Iistory"[2] of Lucian and in the "Voyages" of Cyrano de ergerac;[3] to say nothing of the grotesque figures of the ainters. So we know stories with the rhetoricians belong in e number of *progymnasmata* or preliminary exercises. But king *knowledge* in a narrower sense, *i.e.* as knowledge of

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ventive genius," and which furnished Ludovico Ariosto, 1474–1533, with the eme of his *Orlando Furioso*. For an account of the two writers and their orks, *cf.* J. A. Symonds, *Renaissance in Italy*, Pt. IV., *Italian Literature*, ol. 1, pp. 456 *sq.*, Vol. 2, pp. 1 *sq.* New York, H. Holt & Co., 1885.

Through a misunderstanding of Leibnitz's reference to the Count of Scanano, Schaarschmidt, in his note to the passage, has wrongly identified him ith Tito Giovanni Ganzarini, 1518–1582, Professor of Literature at Modena, lled il Scandianese, from his birthplace, Scandiano. Ariosto published his *rlando Furioso* in 1516, two years before Ganzarini was born, and could arcely be said to have "followed" an author who was only fifteen years d when the poet himself died. — Tr.

[1] The *Amadis de Gaula*, the best of all the old romances of chivalry, was iginally written, it is supposed, about 1390, by Vasco de Lobeira, a Portuese knight attached to the court of John I. of Portugal, and who died in 1403. he oldest text now extant is in Spanish prose, a version from the Portuguese iginal, now lost, made by Garcia Ordoñez de Montalvo, between 1492 and 04. Editions of the Spanish version are numerous, the earliest accessible ing that of 1519; and there are translations in English, French, German, alian, and other languages. The best and at present the only readable lition in English is the abridged translation (with a Preface giving an count, not, however, without error, of the work), made from the Spanish, Robert Southey, London, 1803, 4 vols., 12mo, new ed., London, 1872, 3 vols., mo. *Cf.* also, V. de Lobeira, *Amadis de Gaula*, Barcelona, 1847–8, 4 vols., mo; George Ticknor, *Hist. of Spanish Lit.*, 3d ed., Boston, 1863, Vol. 1, . 198–207; L. Braunfels, *Kritischer Versuch über Amadis*, Leipzig, 1876. may be added that the writer of the article, "Amadis of Gaul," in the *ncyclop. Brit.*, 9th ed., argues for the Anglo-Norman origin of the romance, the ground that all its ideas and materials, its design and machinery, long to the Anglo-Norman romance-cycle in vogue before Lobeira was rn. — Tr.

[2] The Ἀληθοῦς ἱστορίας λόγος (*Veræ Historiæ*) of Lucian is one of the witty tirist's cleverest works, written in easy and elegant Greek, and exhibiting eat fertility of invention. It was purposely composed, says Lucian, as a tire on the poets and logographers who have written so many marvellous les, and contains things which neither he nor any one else has ever seen, hich not only do not, but cannot, exist, and descriptions of experiences and lventures which are absurd and impossible, chief among which is a voyage the moon. Lucian himself says that the only true statement in his History that it contains nothing but lies from beginning to end. It has without doubt pplied hints to, or served as a model for, writers like Rabelais, Swift, and yrano de Bergerac. — Tr.

[3] *Cf. ante*, p. 228, note 2. Amid many imaginative extravagances, these *yages* contain a pretty exact knowledge of the philosophy of Descartes. — Tr.

truth, as you, sir, do here, I say it is quite true that truth i always grounded in the agreement or disagreement of ideas but it is not true in general that our knowledge of truth is perception of this agreement or disagreement. For when w know truth only empirically, from having experienced it without knowing the connection of things and the reaso there is in what we have experienced, we have no perceptio of this agreement or disagreement, unless we mean that w feel it in a confused way without being conscious of it. Bu your examples, it seems, show that you always demand a knowledge in which one is conscious of connection or opposition and this is what cannot be granted you. Further, we ca treat a complex theme not alone by seeking the proofs of it truth, but also in explicating and otherwise illustrating i according to the topical order, as I have already observe Finally, I have a further remark to make upon our definition viz. that it appears only suited to categorical truths, in whic there are *two ideas*, the subject and the predicate; but ther is besides a knowledge of hypothetical truths or what may b reduced thereto (as disjunctives and others) in which there i connection between the antecedent and the consequent proposition; thus more than two ideas may enter therein.

§ 3. *Ph.* [Let us limit ourselves here to the knowledge c truth and then apply what will be said of the connection c ideas to the connection of propositions, in order to include i one whole the categorical and hypothetical truths.] Now believe that this agreement or disagreement may be reduce to four kinds: (1) Identity or diversity, (2) Relation, (3) Coexistence or necessary connection, (4) Real existence. § 4 For the mind perceives immediately that one idea is not another, that white is not black; § 5. then it perceives thei relation by comparing them with each other; for exampl that two triangles whose bases are equal and which are foun between two parallels are equal. § 6. Next there is coexis ence (or rather connection), as fixedness always accompanie the other ideas of gold. § 7. Finally there is real exis ence beyond the mind, as when it is said: God is.

Th. I believe it may be said that the connection is nothin else than the *agreement* or the relation taken generally. And have remarked above that every relation is either of *con* *arison* or *concurrence.* That of *comparison* gives diversity nd identity, either complete or partial; whereby are consti- ıted the concepts of the same or the diverse, the like or unlike. *'oncurrence* contains what you call coexistence, *i.e.* connection f existence. But when we say that a thing exists or that it as real existence, this existence itself is the predicate, *i.e.* ; has a notion joined with the idea in question, and there is onnection between these two notions. The *existence* of the bject of an idea may also be conceived, as the concurrence of his object with the Ego. Thus I believe it may be said that here is only comparison or concurrence; but that the com- arison which marks identity or diversity, and the concurrence f the thing with the Ego, are the relations which deserve to e distinguished among others.[1] More exact and more pro- ound researches might perhaps be made; but I content myself ere with making remarks.

§ 8. *Ph.* There is *actual knowledge,* which is the present erception of the relation of ideas; and there is *habitual nowledge,* when the mind has so evidently perceived the greement or disagreement of ideas, and so placed it in its nemory, that every time it comes to reflect upon the proposi- ion, it is at once certain of the truth it contains without the east doubt. For being capable of thinking clearly and dis- inctly of but one thing at once, men would all be very igno- ant if they knew only the actual object of their thoughts; nd he who knew most would know but one truth.

Th. It is true that our science, the most demonstrative in- eed, being very often obliged to acquire its existence by a ong chain of inferences, must involve the memory of a past emonstration which is no longer distinctly in view, when the onclusion is made; otherwise it would always be repeating his demonstration. And even while it lasts it cannot be nderstood as a complete whole at once; for all its parts can- ot be present in the mind at the same time; thus always re- 'alling the preceding part to mind, we should never advance to he last which achieves the conclusion. This is the reason also that without writing it would be difficult properly to establis the sciences, the memory not being sufficiently reliable. B having put in writing a long demonstration, like, for exampl those of Apollonius,[1] and having gone over again all its part as if they were examining a chain, link by link, men ca assure themselves regarding their reasonings; for which pu pose proofs are also of use, and the result at last justifies th whole. But we see by this that as all belief consists in th memory of past life, of proofs or reasons, it is not within ou power or choice to believe or disbelieve, since memory is n a thing depending on our will.

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[1] Leibnitz reduces Locke's four kinds of agreement or disagreement to two, nd thus generalizes the relation and considers the existence as the concur- ence of the object with the Ego. This concurrence Leibnitz explains by his octrine of pre-established harmony. — TR.

§ 9. *Ph.* It is true that our habitual knowledge is of tw sorts or degrees. Sometimes, truths laid up as it were in th memory no sooner present themselves to the mind, than it se the relation between the ideas entering therein; but, som times, the mind contents itself with the memory of the convi tion, without retaining the proofs, and often, indeed, withou the power to recall them if it wished. It may be thought th this is rather to believe one's memory than really to know th truth in question, and this formerly appeared to me to be mean between opinion and knowledge, a kind of assuran superior to simple belief based upon the testimony of anothe But upon due reflection I find that this knowledge contai perfect certainty. I remember, *i.e.* I know (memory bei only the reviving of something past), that I was once certa of the truth of this proposition, that the three angles of a tr angle are equal to two right angles. Now, the immutabili of the same relations between the same immutable thin is at present *the mediate idea* which shows me that, if the were once equal, they will be so still. It is upon this groun that in mathematics *particular demonstrations* furnish gener knowledge; otherwise a geometer's knowledge would not e tend beyond this particular figure which he had drawn whi demonstrating it.

Th. *The mediate idea* of which you, sir, speak, presuppos the fidelity of our memory; but it sometimes happens that o memory deceives us, and that we have not made every nece sary effort, although we now believe we have. This is clear seen in the examination of accounts. Sometimes there a

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[1] *Cf. ante*, p. 108, note 1.—Tr.

xaminers officially appointed, as at our mines in the Harz,
nd to make the receivers of the particular mines more atten-
ive, they have imposed a money penalty upon every error in
alculation; nevertheless they find them in spite of this pen-
lty. But the more care we employ, the more reliance we can
lace upon past reasonings. I have devised a method of keep-
ng accounts, by which he who collects the sums of the col-
mns leaves upon the paper traces of the progress of his
easoning, so that he does not reason in vain. He can always
evise and correct the last errors without affecting the first:
he examination, also, which another desires to make costs, in
his way, almost no trouble, because he can examine the very
ame traces at a glance. There are, besides, means of verifying
he accounts of each article, by a very convenient kind of proof,
vithout increasing to any considerable extent the labor of the
omputation. And all this easily shows that men may have
igorous demonstrations on paper, and have an infinite number
f them. But unless we remember that we have been abso-
utely accurate, we cannot have this certainty in the mind.
And this accuracy consists in an orderly procedure, the observ-
nce of which in each part is an assurance as regards the
vhole; as in the examination of a chain by links, in which
nspecting each to see if it is strong, and measuring with the
and so as not to skip any, assurance is obtained of the good
uality of the chain. And by this means we have all the
ertitude of which human things are capable. But I do not
gree that in mathematics *particular demonstrations* upon the
igure which is drawn furnish this general certitude, as you
eem to take it. For you must know that it is not the figures
vhich furnish the proof with geometers, although the style of
he exposition may make you think so. The force of the dem-
nstration is independent of the figure drawn, which is drawn
nly to facilitate the knowledge of our meaning, and to fix the
ttention; it is the universal propositions, *i.e.* the definitions,
xioms, and theorems already demonstrated, which make the
easoning, and which would sustain it though the figure were
ot there. Hence it is that a learned geometer, like Scheube-
ius,[1] has given Euclid's figures without the letters which might

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[1] Johann Scheybl — Latin, Scheubelius — 1494–1570, was, according to Jöcher, *llgemeines Gelehrten-Lexicon*, Leipzig, 1750–51, Vol. 4, p. 257, a professor

bind them to the demonstration he has put with them; and another, like Herlinus,[1] has reduced the same demonstrations to syllogisms and prosyllogisms.

CHAPTER II

OF THE DEGREES OF OUR KNOWLEDGE

§ 1. *Ph.* *Knowledge* is then *intuitive* when the mind perceives the agreement of two ideas immediately by themselves without the intervention of any other. In this case, the mind takes no pains to prove or examine the truth. As the eye sees the light, the mind sees that white is not black, that a circle is not a triangle, that three is two and one. This knowledge is the clearest and most certain of which human weakness is capable; it acts in an irresistible manner without allowing the mind to hesitate. It is knowledge that the idea is in the mind as perceived. Whoever asks for greater certitude, knows not what he asks.

Th. *Primitive* truths, which are known by *intuition*, are o two kinds, like the *derivative.* They are truths of *reason* o truths of *fact.* Truths of reason are necessary, and those of fact are contingent. The primitive truths of reason are those which I call by the general name of *identical*, because they seem only to repeat the same thing without giving us any information. They are affirmative or negative. The *affirmative* are such as the following: *Each thing is what it is*, and in

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of mathematics in the University at Tübingen. His *Euclidis sex libri prim de geometricis principiis gr. et lat. cum commentario* appeared at Basle, 1590 — TR.

[1] Christian Herlinus, whom Leibnitz also mentions toward the end of his *Meditationes de Cog., Verit., et Ideis*, as co-editor with Conrad Dasypodius (1532–1600, professor of mathematics in Strassburg University, and Canon of St. Thomas' Church) of Euclid, appears to be otherwise unknown. Their joint work, of which Herlinus did the first and fifth books, and Dasypodius the other four, appeared under the title *Analysis geometriæ sex librorum Euclidis*, etc., Strassburg, 1566, fol. It is, says Michaud, *Biog. Universelle* Vol. 10, p. 560, a pedantic work in which the demonstrations of the Greek geometer are reduced to syllogistic form, so that a proposition of fifteen or twenty lines is spun out into several pages, and is often more involved or at least more difficult to follow. — TR.

s many examples as you please, A is A, B is B. I shall e what I shall be. I have written what I have written. And *othing* in verse as in prose, *is to be nothing* or a trifle. *The quilateral rectangle is a rectangle.*[1] *The rational animal* is always *an animal.* And in the hypothetical: *If the regular figure f four sides is an equilateral rectangle, this figure is a rectangle.* Copulatives, disjunctives, and other propositions are also suseptible of this identicism, and I reckon indeed among the affirmatives: non-A is non-A. And this hypothetical: if A is non-B, it follows that A is non-B. Again, if non-A is BC, it ollows that non-A is BC. *If a figure having no obtuse angle may be a regular triangle, a figure having no obtuse angle may be regular.* I come now to the identical *negatives* which belong either to the *principle of contradiction* or to the *disparates.* The principle of contradiction is in general: *a proposition is ither true or false:* this contains two true statements, one that he true and the false are not compatible in one and the same proposition, or *that a proposition cannot be true and false at once;* the other that the opposition or the negation of the true and the false are not compatible, or that there is no mean beween the true and the false, or rather: *it is impossible for a proposition to be neither true nor false.* Now all this is also true in all imaginable propositions in particular, as *what is A cannot be non-A.* Again,[2] AB cannot be non-A. An equilateral rectangle cannot be non-rectangle. Again, *it is true that every man is an animal,* then it is false that *any man is found who is not an animal.* We may vary these statements in many ways, and apply them to copulatives, disjunctives, and others. As for the *disparates,* they are the propositions which state hat the object of one idea is not the object of another idea; as, *that heat is not the same thing as color;* again, *man and animal are not the same,* although every man is an animal. All this may be asserted independently of all proof or of reduction to opposition, or to the principle of contradiction, when these ideas are sufficiently understood not to requir here analysis; otherwise they are liable to be misunderstood for in saying, *the triangle and the trilateral are not the same,* w should be mistaken, since upon proper consideration we fin that three sides and three angles always go together. In say ing, *the quadrilateral rectangle and the rectangle are not the sam* we should also be mistaken. For it is found that the four sided figure alone can have all the angles right angles. Bu we may also say in the abstract that *the triangle is not the tr lateral,* or that *the formal causes* of the triangle and of the tr lateral are not the same, as the philosophers express it. The are different relations of one and the same thing.

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[1] Erdmann and Jacques omit: "Est un rectangle. L'animal raisonnable est toujours un animal. Et dans les hypothetiques: Si la figure reguliere de quatre costés est un rectangle equilateral." — Tr.

[2] Erdmann and Jacques omit: "Item AB ne sauroit estre non-A. Un rectangle equilateral ne sauroit estre non-rectangle. Item il est vray que tout homme est un animal, donc il est faux," and instead of the last four words, read: "Item il est vray," etc. — Tr.

Some one after having heard with patience what we hav just said up to this point, will lose it after all and will sa that we are amusing ourselves with frivolous statements, an that all identical truths are useless. But he will make thi judgment for want of having thought sufficiently upon thes matters. The deductions of logic, for example, are demon strated by identical principles; and geometers require th principle of contradiction in their demonstrations which re duce to the impossible.[1] Let us be content here to show th use of identicals in the demonstrations of rational deductior I say, then, that the principle of contradiction alone suffices t demonstrate the second and the third figures of the syllogisr by means of the first. For example, we may conclude in th first figure, in *Barbara:*

All B is C,
All A is B,
Then All A is C.

Suppose that the conclusion is false (or that it is true tha some A is not C), then one or the other of the premises wil be false also. Suppose that the second is true, the first mus then be false, which maintains that all B is C. Then its con tradictory will be true, *i.e.* some B will not be C. And thi will be the conclusion of a new argument, drawn from th lsity of the conclusion and the truth of one of the premises f the preceding argument. Here is this new argument:

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[1] *I.e.* the so-called indirect proof, which provisionally assumes the truth o the contradictory opposite of the proposition to be proved, and then, havin discovered the impossibility of this assumption, concludes, by the aid of th principle of contradiction, that the original proposition is correct. — TR.

Some A is not C.

This is opposed to the preceding conclusion supposed false.

All A is B.

This is the preceding premise supposed true.

Then some B is not C.

This is the present true conclusion, opposed to the preceding false premise.

This argument is in the mode *Disamis* of the third figure, hich is thus plainly demonstrated and at once from the ode *Barbara* of the first figure by employing simply the priniple of contradiction. And I noticed in my youth, when I xamined minutely these things, that all the modes of the econd and third figure may be drawn from the first by this ethod alone, by supposing that the mode of the first is valid, nd consequently that the conclusion being false, or its contraictory being taken as true, and one of the premises being aken as true also, the contradictory of the other premise is rue. It is true that in the schools of logic they prefer to ake use of conversions to draw the *less principal figures* from he first which is the *principal*, because this method appears etter suited to the scholars. But for those who seek demontrative reasons, in which the least possible suppositions must e employed, we shall not demonstrate by the supposition of onversion what may be demonstrated by the primitive principle alone, which is that of contradiction and which assumes othing. I have also made this apparently remarkable obserration, that only the *less principal figures* which are called *irect*, viz. the second and the third, can be demonstrated by he principle of contradiction by itself: but the *less original ndirect figure*, the *fourth*, whose invention the Arabs attribute o *Galen*,[1] although we found nothing concerning it in the works of his remaining to us, nor in the other Greek author the fourth, I say, has this disadvantage, that it cannot b derived from the first or principal figure by this metho alone, and it is necessary besides to employ another suppos tion, viz. conversions, so that it is farther removed by on degree than the second and the third, which are on a leve and equally removed from the first; while the fourth need also the second and the third for its demonstration. For it i found very opportunely that the conversions required ar demonstrated by the second or third figure, demonstrabl independently of the conversions, as I have just shown. It i Peter Ramus[1] who already made this remark concerning th demonstrability of conversion by these figures; and (if I an not mistaken) he reproached the logicians, who make use o conversion to demonstrate these figures, with arguing in circle, although it was not so much the circle that he found i necessary to reproach them with (for they did not use thes

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[1] Claudius Galenus, c. 130–c. 201, a very celebrated physician and medical riter, who also wrote a large number of philosophical and logical works, the reater part of which are now lost. His medical and scientific treatises contain onsiderable philosophical and logical discussion, and his *De usu partium*

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corp. hum. is, says Janet, "an apology for and a continual application of th principle of final causes." The most complete ed. of his works containin the Greek text and a Latin version is the *Opera Omnia*, cur. C. G. Kühn Leipzig, 1821–33, 20 vols., 8vo. For his philosophical views, *cf.* K. Sprengel *Beitr. z. Gesch. d. Medicin*, 1, 117–195, Halle, 1794–6; on his logic, *cf.* Prantl *Gesch. d. Logik*, 1, 559–577. A brief account of his philosophy is given b Zeller, *Philos. d. Griech.*, III., 1 [Vol. 5], 823 *sq.*, 3d ed., Leipzig, 1880.

The invention of the fourth syllogistic figure was ascribed to Galen b Averroes, 1105–1198, but without adequate foundation. Galen was led throug the additions to the first figure already made by Theophrastus, c. 373–c. 28 B.C., to transpose the premises in the same, and only by this means indirectl to the fourth arrangement of the middle term. *Cf.* Prantl, *Gesch. d. Logi im Abendlande*, 1, 570–574; also Sir W. Hamilton, *Lects. on Logic*, Boston, 1873 Lect. XX., ¶ LXXIII., pp. 285–6; Lect. XXI., ¶ LXXIV., p. 302–3, and notes — Tr.

[1] Petrus Ramus — Pierre de la Ramée — 1515–1572, murdered during St Bartholomew's Night, was a determined opponent of Aristotelian scholasticism and especially of its logic or dialectic, in the place of which he attempted t set up a new, simpler, and better grounded dialectic. For this purpose h wrote and published his two works, *Animadversiones Aristotelicæ*, Paris 1534, etc., and *Institutiones dialecticæ*, Paris, 1543. Following Cicero an Quintilian, his scheme was a blending of logic and rhetoric. For a long tim after him, logicians were divided into Ramists and Anti-Ramists, while th Semi-Ramists, among whom were Alsted and Goclen (*cf. ante*, p. 311, note 2) sought to mediate between the Aristotelic dialectic, as set forth by Melanchthon, and that of Ramus. The remarks to which Leibnitz here refers ar found, according to Schaarschmidt, in *Animad. Aristotel.*, Lutetiæ, 1548 pp. 388 *sq.* For a good account of Ramus, *cf.* Stöckl, *Gesch. d. Philos. d Mittelalters*, III. [Vol. 4], pp. 296 *sq.*; also Ueberweg-Heinze, *Gesch. d. Philos.*, 7th ed., 3, 24, 26. — Tr.

gures in their turn to justify the conversions) as the *hysteron oteron* or the reversal (*le rebours*); because conversions need ther to be demonstrated by these figures, than these figures the conversions. But as this demonstration of conversions ows also the use of the *identical affirmatives*, which many ke as altogether frivolous, it will be so much more to the rpose to introduce them here. I wish to speak only of conersions without contraposition, which suffice me here, and hich are simple or *per accidens*, as they are called. Simple nversions are of two kinds: that of the universal negative, : *no square is obtuse-angled*, then *no obtuse-angled figure is a uare;* and that of the particular affirmative, as: *some trigles are obtuse-angled*, then some *obtuse-angled figures are iangles.* But *conversion per accidens*, as it is called, concerns e universal affirmative, as: *every square is a rectangle*, then *me rectangles are squares.* A *rectangle* is here always underood to be a figure all of whose angles are right angles, and the *square* is understood a regular quadrilateral. Now the estion is to demonstrate these three kinds of conversion, hich are:

(1) No A is B, then no B is A.
(2) Some A is B, then some B is A.
(3) All A is B, then some B is A.

Demonstration of the first conversion in *Cesare*, which longs to the second figure.

No A is B.
All B is B.
Then no B is A.

Demonstration of the second conversion in *Datisi*, which bengs to the third figure.

All A is A.
Some A is B.
Then some B is A.

Demonstration of the third conversion in *Darapti*, which longs to the third figure.

All A is A.
All A is B.
Then some B is A.

This shows that the purest and apparently most useless identical propositions are of considerable use in the abstract and general; and that may teach us that we should not despise any truth. As for this proposition, that *three is as much as two and one*, which you, sir, still adduce as an example of intuitive knowledge, I have to say that it is only the definition of the term *three*, for the simplest definitions of numbers are formed in this way: *Two* is one plus one, *three* is two plus one, *four* is three plus one, etc. It is true that there is therein a concealed statement, which I have already spoken of, viz. that these ideas are possible: and this is here known *intuitively*, so that it may be said, that an intuitive knowledge is comprised in definitions when their possibility appears at once. And in this way all *adequate* definitions contain primitive truths of reason and consequently intuitive knowledge. In short, you can say in general that all primitive truths of reason are immediate with respect to an *immediateness of ideas.*

As for the *primitive truths of fact*, they are the immediate internal experiences of an *immediateness of feeling.* And here it is that the first truth of the Cartesians or of St. Augustine: *I think, therefore I am*, i.e. *I am a thing which thinks,* holds good.[1] But we must know, that as the identicals are general or particular, and as one is as clear as the other (since the statement that A *is* A is as clear as the statement that *a thing is what it is*), so is it also with the first truths of fact. For not only is it immediately clear to me that *I think*, but it is wholly as clear to me that *I have different thoughts*, that sometimes *I think* of A, and sometimes of B, etc. Thus the Cartesian principle is valid, but it is not the only one of its kind. You see by this that all *primitive truths* of reason or of fact have this in common, that they cannot be proved by anything more certain.

§ 2. *Ph.* I am very glad, sir, that you have carried forward rther than I had done that which relates to *intuitive* knowl- ge. Now *demonstrative knowledge* is only a concatenation of tuitive knowledge in all the connections of mediate ideas. or often the mind cannot unite, compare, or apply immedi- ely the ideas one to the other, and this compels it to make e of other ideas (one or more) as means to the discovery of e agreement or disagreement it seeks, and this is what we ll *reasoning*. As in demonstrating the three angles of a tri- ngle to be equal to two right angles, it finds some other ngles which are seen to be equal both to the three angles of e triangle and to two right angles. § 3. These intervening eas are called *proofs*, and the disposition of the mind to dis- ver them is called *sagacity*. § 4. And even when found, is knowledge cannot be acquired without pains and atten- on and by more than a single passing view; for the mind ust enter upon a progression of ideas, made gradually and degrees, § 5. and there is doubt before the demonstra- on. § 6. It is not so clear as the intuitive knowledge, as e image reflected by several mirrors from one to another ows more and more faint with each reflection, and is no nger at once so recognizable especially by weak eyes. It is e same with knowledge produced by a long train of proof. 7. And although each step taken by reason in the demon- ration is intuitive knowledge or simple sight, nevertheless in this long train of proofs the memory does not so exactly eserve this connection of ideas, men often take fallacies for emonstrations.

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[1] *Cf.* Augustine, *Solil.* II., 1: "Tu qui scis te nosse, scis te esse? Scio! Unde scis? Nescio! Simplicem te sentis an multiplicem? Nescio! Cogitare te scis? Scio!" in *Opera*, Vol. 1, p. 369, Benedictine ed., Paris, Franciscus Muguet, 1679; Vol. 1, p. 885, ed. Migne, Paris, 1841. Augustine, 354–430, thus anticipated the principle of Descartes, 1596–1650, "Cogito ergo sum," a fact unknown however to Descartes, who was not one of the class of reading philosophers, until brought to his knowledge by Arnauld, 1612–1694, and Mersenne, 1588–1648, in their criticism of his philosophy. — TR.

Th. Besides natural sagacity or that acquired by exercise, ere is an art of finding mediate ideas (the *medium*), and this t is *analysis*. Now it is well to consider here, that the ques- on is sometimes to find the truth or falsehood of a given oposition, which is nothing else than an answer to the ques- on *An? i.e.* whether it is or is not. Sometimes it concerns n answer to a more difficult (*cœteris paribus*) question, where is asked for example *by whom and how?* and where there is ore to be supplied. And it is these questions alone, which ave a part of the proposition blank, which the mathemati- ans call *problems*. As, when we are asked to find a mirror hich collects all the rays of the sun in one point, we are ked for its form, or how it is made. As for the first questions in which the point at stake is only truth and falsehood and where there is nothing to be supplied in the subject or predicate, there is less *invention*, yet there is some, and the judgment alone is not sufficient. It is true that a man of judgment, *i.e.* one who is capable of attention and reserve, and who has the leisure, the patience, and the necessary freedom of mind, may understand the most difficult demonstration if properly set before him. But the most judicious man in the world, without other aid, will not always be capable of discovering this demonstration. Thus there is still some invention therein; and with geometers there was more of it formerly than now. For when analysis was less cultivated, more sagacity was necessary to attain it, and it is on this account that some geometers still of the old school,[1] or others who have not yet sufficient aptness in the new methods, think they have done something wonderful when they discover the demonstration of some theorem that others have invented. But those who are versed in the art of invention know when this is estimable or not; for example, if some one sets forth the *quadrature* of a space comprised within a curved and a straight line, which is successful in all its segments and which I call general, it is always within our power according to our methods to discover its demonstration, provided we are willing to take the trouble. But there are some particular quadratures of certain portions, where the thing may be so involved, that it will not always be possible (*in potestate*) thus far to develop it. It happens also that induction presents us with truths in numbers and in figures whose general reason is not yet discovered. For much is needed in order to attain perfection of analysis in geometry and in numbers, as many are becoming conceited upon the basis of the boasts of some men otherwise excellent, but a little too hasty or too ambitious.

But it is much more difficult to discover important truths, and still more to discover means of producing what is sought, when it is justly sought, than to discover the demonstration of truths which another has discovered. Beautiful truths are often attained by *synthesis*, by passing from the simple to the complex; but when it is a question of discovering exactly the means of producing what is proposed, synthesis is ordinarily t sufficient, and often to be willing to make all the requisite mbinations would be an endless task, although one might ten be aided therein by the *method of exclusion,*[1] which cuts a good portion of useless combinations, and often nature es not admit any other method. But the means are not al- ays at hand for the proper pursuit of this method. Analysis en must give us a thread in this labyrinth, when it is possi- e, for there are cases where the nature itself of the question mands that we grope about, short cuts not being always ssible.

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[1] Gerhardt reads: "roche"; Erdmann and Jacques: "race." — TR.

§ 8. *Ph.* Now as in demonstration intuitive knowledge is ways supposed, it has, I think, given occasion for this maxim: *at all reasoning springs from things already known and agreed* (*ex præcognitis et præconcessis*).[2] But we shall have occasion speak of the falsity of this axiom when we speak of the axims which are improperly taken as the foundation of our asoning.

Th. I am curious to learn what falsehood you can find in an iom apparently so reasonable. If it were always necessary reduce everything to intuitive knowledge, demonstration uld often be insufferably prolix. This is why mathema- ians have had the cleverness to divide the difficulties and to monstrate separately the intervening propositions. And ere is art also in this; for as the mediate truths (which are lled *lemmas,* since they appear to be a digression) may be signed in many ways, it is well, in order to aid the under- nding and the memory, to choose those of them which eatly shorten the process, and appear memorable and worthy themselves of being demonstrated. But there is another obstacle, viz.: that it is not easy to demonstrate all the axioms and to reduce demonstration wholly to intuitive knowledge And if we had chosen to wait for that, perhaps we should no yet have the science of geometry. But we have already spoke of this in our former conversations, and we shall have occasio to speak of it again.

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[1] The "method of exclusion" or elimination, says Schaarschmidt, proceeds m a disjunctive judgment, the predicate of which embraces in the sum of divisional members all possible determinations of the subject. After it has en shown that individual divisional members cannot be united with the ject in a categorical judgment, that one alone of the divisional members ich cannot be separated from the subject remains as the actual predicate the valid determination of the subject. For example: A is B, or C, or D, E. In this formula, B, C, D, E must include all thinkable predicate- erminations of A. In the question: Is A, B, or C, or D, or E, it is then ved that A is not C, D, E, in which case A must be B; or that A is not D, E, in which case A must be C, and so on. — TR.

[2] *Cf.* Aristotle, *Analyt. Post.*, I., 1, p. 71ª, 1: πᾶσα διδασκαλία καὶ πᾶσα μάθησις νοητικὴ ἐκ προϋπαρχούσης γίνεται γνώσεως. — TR.

§ 9. *Ph.* We shall come to that presently; now I shall re mark again what I have already touched upon more than once that it is a common opinion that only the mathematica sciences are capable of a demonstrative certainty; but as the agreement and disagreement which may be known intuitively is not a privilege belonging only to the ideas of numbers and figures, it is perhaps for want of application on our part that mathematics alone have attained to demonstrations. § 10 Many reasons conspired to this end. The mathematical sciences are very generally useful; the least difference therein is very easily recognized. § 11.[1] These other simple ideas, which are appearances or situations produced in us, have no exact measure of their different degrees. § 12.[2] But when the difference of these visible qualities, for example, is sufficiently great to excite in the mind clearly distinct ideas, as those of blue or red, they are as capable of demonstration as those of number and extension.

Th. There are notable examples enough of demonstration outside of mathematics, and it may be said that Aristotle has already given some in his "Prior Analytics." In fact logic is as susceptible of demonstrations as geometry, and it may be said that the logic of the geometers, or the methods of argumentation explained and established by Euclid in reasoning upon propositions, are a particular extension or promotion of general logic. Archimedes[3] is the first, whose works we have, who has practised the art of demonstration upon an occasion where he is treating of physics, as he has done in his book on uilibrium. Furthermore, jurists may be said to have many od demonstrations; especially the ancient Roman jurists, iose fragments have been preserved to us in the Pandects. im wholly of the opinion of Laurentius Valla,[1] who cannot ough admire these authors among others, because they all eak in a manner so just and so clear and in fact reason in way closely approaching the demonstrative, and often it is iolly demonstrative.[2] Indeed, I do not know any science tside that of law and that of arms, in which the Romans ve made any considerable addition to what they received om the Greeks.

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[1] § 11, as also § 12, is § 17 in the texts of Erdmann and Jacques. — Tr.

[2] § 12 is § 13 in Locke, *Philos. Works*, Vol. 2, p. 140 (Bohn's ed.). — Tr.

[3] Archimedes, 287–212 B.C., the greatest mathematician among the Greeks distinguished also for his discoveries in hydrostatics and hydraulics, and fo his ingenious inventions. He first placed the science of engineering upon a sound mathematical basis. The most complete and magnificent edition of his extant works is that edited by Torelli and published at Oxford, at the Clarendon Press, 1792, fol. — Tr.

> Tu regere imperio populos Romane memento:
> Hæ tibi erunt artes pacique imponere morem,
> Parcere subjectis, et debellare superbos.[3]

iis precise manner of expressing themselves is the reason at all the jurists of the Pandects, though sometimes quite distant from one another in time, seem to be a single autho and there would be much difficulty in distinguishing them, i the names of the writers were not at the beginning of the extracts; as it would be difficult to distinguish Euclid,[1] Archimedes and Apollonius[2] in reading their demonstrations upo matters which the one as well as the other has touched upon It must be admitted that the Greeks have reasoned with al possible accuracy in mathematics, and that they have left th human race models in the art of demonstration: for if th Babylonians and the Egyptians had anything more than a empirical geometry, nothing of it at least remains; but it i astonishing that these same Greeks lost it to such an extent at once as soon as they turned aside ever so little from numbers and figures in order to proceed to philosophy. For it i strange that we do not see a shadow of demonstration in Plat and in Aristotle (his "Prior Analytics" excepted) and in al the other ancient philosophers. Proclus[4] was an excellen geometer, but he seems another man when he speaks on philosophy. What has made it easier to reason demonstrably i mathematics is largely the fact that experience can there guarantee the reasoning at every moment, as is also the case in th syllogistic figures. But in metaphysics and ethics this parallelism of reason and experience is no longer found; and i ysics experiments demand labor and expense. Now men once relaxed their attention, and as a consequence were l astray when they were destitute of this faithful guide, perience, who aided and sustained them in their walk, as ıt little revolving machine does, which prevents children ›m falling when walking. There was a *succedaneum*,[1] but it something that has not been and is not yet sufficiently con- lered. And I shall speak of it in its place. For the rest, ıe and red are scarcely capable of furnishing matter for monstration by means of the ideas we have of them, because ɘse ideas are confused. And these colors do not supply ıtter for reasoning so long as in experience they are found ɔompanied by some distinct ideas, but in which the con- ction with their own ideas does not appear.]

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[1] Laurentius Valla — Lorenzo della Valle — c. 1407–1457, a humanist and ilologian of the earlier Italian Renaissance, was an earnest opponent of the iolastic dialectic, a determined foe of tradition and authority, and the initi- r and champion of a bold and unbiassed criticism which he applied to iguage, historical documents, and ethical opinions. He was eminent as a tinist, and his treatise *Elegantiæ latinæ linguæ*, c. 1431, in six books, — Preface to the third book of which Schaarschmidt thinks Leibnitz probably l in mind in referring to Valla's admiration for the style of the Roman ists, therein very highly praised, — subjected the forms of Latin grammar l rhetoric to critical investigation and analysis, and established upon a entific foundation the principles of Latin style. His *De falso credita et entita Constantini Donatione*, 1440, destroyed the claims of the Papacy to nporal power based upon this alleged "Donation," by proving its docu- ntary foundations to be forgeries. His principal philosophical writings are: *voluptate et vero bono*, 1431, in which he boldly defended the Epicurean ctrine of pleasure as the true and only good; *De libero arbitrio*; and the *alecticæ disputationes contra Aristotelicos*, 1499, of which Prantl, *Gesch. Logik im Abendlande*, 4, 161–167, gives some account with citations. lla's *Opera Omnia*, Basiliæ, 1465 and 1540–1543. Leibnitz refers to him l his *De lib. arbit.* and *De voluptate* in the *Théodicée*, Pt. III., §§ 405 *sq.* r accounts of his life and works, *cf.* G. Tiraboschi, *Storia della Letteratura liana*, Vol. 6, Pt. II., pp. 339–340, Rome, 1784; Symonds, *Renaissance in ly*, Pt. II., *The Revival of Learning*, p. 258 *sq.*, New York, H. Holt & Co., 31. For his philosophy, *cf.* Stöckl, *Gesch. d. Philos. d. Mittelalters*, III. ol. 4], 279–283. Mancini published at Florence, 1891, a brilliant and exhaus- e monograph investigating and settling disputed points in Valla's life. — TR.

[2] *Cf.* Leibnitz's letter to Kestner, No. 15, in Ch. Kortholt, *Leibnit. epist. diversos*, Lipsiæ, 1734–1742, Vol. 3, p. 256, Dutens, *Leibnit. opera omnia*, l. 4, Pt. III., p. 267, where he expresses himself similarly as here. Also, hrauer, *Leibniz, eine Biographie*, Pt. I., pp. 36, 37. — TR.

[3] Verg. *Æn.* 6, 851–853. — TR.

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[1] *Cf. ante*, p. 93, note 1. — Tr.

[2] *Cf. ante*, p. 108, note 1. — Tr.

[3] A strange remark for Leibnitz to make, who had so thoroughly studie Aristotle in his youth, and in later years Plato, whose works contain demonstrations inferior in no respect certainly to the precision of the Pandects. Th only explanations that seem to touch the case are that Leibnitz had in mind th stringency and completeness of mathematical demonstration, which in *form* and sometimes in *content* also, is apparently, and sometimes really, superior though not necessarily so merely because mathematical, to the demonstration of philosophy; or, as he seems to suggest in the immediately following context, that metaphysics being a matter of pure thought and ethics largely a ideal not as yet realized in the actual, their demonstrations cannot, like thos of mathematics, be experimentally verified, and must thus be regarded as, i a sense, lacking in completeness as demonstrations. — Tr.

[4] *Cf. ante*, p. 108, note 2. Leibnitz's remark concerning Proclus has it justification in the fact that his philosophical system, while embracing th entire philosophy and theology of his predecessors methodically elaborate with great dialectic art and skill, is yet purely formal in its completeness, it thought exhibiting little freedom or creative power, and wholly lacking in an real scientific basis and character. Though presenting here and there evidenc of deep speculative ability on the part of its author, his philosophy is nevertheless wholly wanting in such demonstration as is found in his mathematica work. — Tr.

§ 14. *Ph.* Besides *intuition* and *demonstration*, which are ɘ two degrees of our knowledge, all the rest is *faith* or *inion*, and not knowledge, at least as regards all *general uths.* But the mind has also another perception, regarding ɘ particular existence of finite beings outside of us, and this *sensitive knowledge.*[2]

Th. [*Opinion*, based on probability, deserves perhaps the me knowledge also; otherwise nearly all historic knowledge d many other kinds will fall. But without disputing about ms, I hold that the *investigation of the degrees of probability* very important, that we are still lacking in it, and that this k is a great defect of our logics.[3] For if the question can- t always be decided absolutely, the degree of resemblance *datis* can always be determined, and consequently one can ısonably judge what view is the most likely. And when our moralists (I mean the wisest of them, such as the present (*moderne*) General of the Jesuits)[1] unite the safest and the most probable, and prefer even the safe to the probable,[2] they are not far in fact from the most probable; for the question of *safety* is here that of the little probability of an evil to be feared. The fault of the moralists lax upon this article[3] has largely been, that they have had a too limited and too inadequate notion of the *probable*, which they have confounded with the *Endoxon*[4] or *the probable* (*opinable*) of Aristotle; for Aristotle in his "Topics" did not mean to accommodate himself to the opinion of others, as did the orators and sophists. *Endoxon* is with him what has been received from the greatest number or the most authoritative: he is wrong in having restricted his "Topics" to this, and this view caused him to adhere only to received maxims, for the most part vague, as if he wished reason only by means of quodlibets[1] or proverbs. But the obable or the likely is more extended: it must be drawn om the nature of things; and the opinion of persons whose thority has weight is one of the things which may contribute render an opinion probable, but not what completes the en- e verisimilitude. At the time when Copernicus[2] was almost one in his opinion, it was still incomparably more *probable* an that of all the rest of the human race. Now I do not know ıt that the establishment of *the art of estimating probabilities*[3] ould be more useful than a majority of our demonstrative iences, and I have thought of this more than once.]

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[1] *I.e.*, a substitute. The expression was much used by the later Roman ists. — Tr.

[2] Locke's word is "sensitive," *Philos. Wks.* (Bohn's ed.), Vol. 2, p. 141, *ad fin.* three degrees of knowledge are intuitive, demonstrative, and sensitive, *cf. ra*, p. 420. — Tr.

[3] *Cf.* Leibnitz's letter to Kestner, No. 11, Jan. 30, 1711, § 3 (Dutens, *Leibnit. om.* 4, Pt. III., 264, and Kortholt, *Leibnit. epist. ad diversos*, 3, 251): "Ea o pars Logicæ, qua sc. gradus verisimilitudinum et argumentorum pondera stituerentur, nuspiam hactenus reperitur traditur. Ego juvenis aliquando ressus sum, sed per varia dissipatus, fere intra voluntatem steti. Topica stotelis scopo meo non respondet. Congerit regulas, quæ occasionem uam præbere possunt de argumentis cogitandi, sed quæ non possunt ere, quantum cuique argumento aut judicio ponderis insit." — Tr.

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[1] Leibnitz probably refers to Tirso Gonzalez, General of the Jesuits from 1687–1705, and author of a work on probabilism, opposing the doctrine and maintaining that the Jesuits did not originate it, entitled *Fundamentum theologiæ moralis, id est tractatus theologicus de recto usu opinionum probabilium*, 4to, Dillingen, 1689, Naples, 1694. An abridgment with the title *Synopsis tract. theol. de recto usu opinionum probabilium, concinnata a theologo quodam Soc. Jesu: cui accessit logistica probabilitatum*, 3d ed., appeared at Venice, 1696, 8vo. *Cf.* Michaud, *Biog. Univ.* 18, 111–112, Du Pin, *Biblioth. des aut. eccles. du XVII. siécle*, and, for the *De recto usu opin. prob.*, Migne, *Theol cur. compl.* Vol. 11, p. 1397. — Tr.

[2] The theory of moral probabilism is, perhaps the most celebrated question discussed in Moral Theology, and formed one of the chief subjects of controversy between the Jansenists and the Jesuits of the seventeenth century The aim of moral probabilism is to find some rule by which action may be determined in that portion of the moral realm in which certainty is impossible and probability only can be attained. The *probable* opinion being that which has a certain number of arguments in its favor, either *intrinsic*, i.e., grounded in reason, judgment in regard to which was restricted to men of considerable education and especially to those versed in moral theology, or *extrinsic*, *i.e.* resting on some external authority, such as that of some theologian of repute and the *safe* opinion, that which conforms to the moral law, casuists distinguish the following doctrines: 1. *Probabilism*, which permits action in accord with the opinion which is least probable and least safe; 2. *Probabilorism*, or the preference of the most probable opinion, regardless of its relative safety 3. *Tutiorism*, or the choice of the safest opinion, without regard to its relative probability. On the whole subject, *cf.* the dissertation of Pierre Nicole annexed to his Latin trans. of Pascal's *Lettres provinciales*, and Janet, *La Morale*, Bk. III., Chap. 3, Paris, 1874, Eng. trans., *The Theory of Morals*, pp 292–308, New York, Chas. Scribner's Sons, 1883. — Tr.

[3] According to Janet, the casuists refuted by Pascal. — Tr.

[4] *Cf. Topics*, I., 1, 100b 21: ἔνδοξα δὲ τὰ δοκοῦντα πᾶσιν ἢ τοῖς πλείστοις ἢ τοῖς σοφοῖς καὶ τούτοις ἢ πᾶσιν ἢ τοῖς πλείστοις ἢ τοῖς μάλιστα γνωρίμοις καὶ ἐνδόξοις. — Tr.

Ph. *Sensitive knowledge*, or that which establishes the exist- ice of particular beings without us, goes beyond bare proba- lity; but it has not all the certainty of the two degrees of ıowledge of which we have just spoken. Nothing is more ertain than that the idea we receive of an external object is our mind, and this is intuitive knowledge: but the knowl- lge whether from this we can certainly infer the existence anything without us corresponding to this idea, this it is hich certain persons think may be questioned, because men ay have such ideas in their minds, when no such thing actu- ly exists. For myself I believe, however, that there is a egree of evidence which elevates us beyond doubt. One is nalterably convinced that there is a great difference between ie perceptions which he has when by day he looks at the sun, nd when by night he thinks about it; and the idea which is renewed by recourse to the memory is very different from that which actually comes to us by means of the senses. Some one will say that a *dream* may produce the same effect. I reply in the first place *that it matters little that I remove this doubt,* because if all is but a dream, reasoning is useless, truth and knowledge nothing at all. In the second place, he will acknowledge, in my opinion, the difference between dreaming of being in a fire, and being actually in it. And if he persists in appearing sceptical, I shall tell him that it is enough that we certainly find pleasure or pain following the application to ourselves of certain objects, true or dreamt of, and that this certitude is as great as our happiness or misery; two things beyond which we have no interest. Thus I think we may count three sorts of knowledge: *intuitive, demonstrative* and *sensitive.*

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[1] The Mediæval Latin "quodlibetum" was a very elaborate and subtle holastic argumentation upon a question chosen at pleasure — "quod libet" - but almost always of a theological or philosophical character. Such ques- ons were called "quodlibetariæ quæstiones"; they were proposed chiefly r the exercise of students, and their discussion was carried on to satisfy uriosity or for entertainment, and, for the most part, served rather to exhibit ie skill and dexterity of the dialectician than to establish truth. The French ord "quolibet," starting from the scholastic use of the term in the sense of n argumentative subtlety, came by a debasing extension of this meaning to gnify a witty, but not always appropriate commonplace, a bad joke, a pun, n epigram; and it is in this sense that Leibnitz, coupling the word with proverbs," uses the term. — Tr.

[2] Nicolas Copernicus, 1473–1543, published his theory of the planetary system ı his *De orbium cœlestium revolutionibus lit. VI.*, Nuremberg, 1543, 2d ed., asle, 1566, both fol. 3d ed., with notes by Nicolas Muler in his *Astronomia nstaurata*, Amsterdam, 1617 and 1640, 4to. — Tr.

[3] *Cf. ante*, p. 213, note 2, p. 214, note 1; also Erdmann, *Leibnit. opera hilos.*, 84. — Tr.

Th. [I think you are right, sir, and I also think that to these species of *certitude* or *certain knowledge* you can add the *knowledge of the probable;* thus there will be two sorts of *knowledge,* as there are two sorts of *proofs,* the first of which produce *certitude,* and the second end only in *probability.* But let us come to this dispute of the Sceptics and the Dogmatists upon the existence of things without us. We have already touched upon it, but we must return to it here. I formerly discussed the subject a great deal *viva voce* and in writing with the late Abbé Foucher,[1] Canon of Dijon, a learned and ıbtile man, but a little too prepossessed in favor of his Acadnicians, which sect he was very desirous of reviving, as Gasndi[1] had brought upon the stage that of Epicurus.[2] His itique upon "The Search after Truth,"[3] and the other minor eatises which he afterwards published, have made their ıthor quite well known. He published also in the "Journal es Savans" some objections to my System of Pre-established armony, when I gave it to the public after having digested for many years; but death prevented him from replying to y answer. He always preached the necessity of guarding gainst prejudice and of using great accuracy, but besides the ıct that he himself did not make it his duty to carry out his ounsel to others, in which he was perhaps excusable, it seems me that he was not careful whether another did it, anticiating doubtless that no one would ever do it. Now I showed im that the truth of sensible things consisted only in the onnection of phenomena, which must have its reason and is ıat which distinguishes them from dreams; but that the truth of our existence and the cause of phenomena is of a different nature, because it establishes substances, and that the Sceptics spoiled what they rightly say by carrying it too far, and by wishing indeed to extend their doubts even to immediate experience, and to the geometrical truths, a thing which Foucher did not do however, and to the other truths of reason, which he did a little too much. But to return to you, sir, you are right in saying that there is ordinarily some difference between feelings and imaginations; but the Sceptics will say that the more or less does not alter the species. Besides, although feelings are wont to be more vivid than imaginations, it is nevertheless a fact that there are cases where imaginative persons are impressed as much or perhaps more by their imaginations than another is by the truth of things; so that I think the true *criterion* concerning the objects of the senses is the connection of the phenomena, *i.e.* the connection of that which takes place in different places and times, and in the experience of different men who are themselves, each to the others, very important phenomena in this respect. And the connection of the phenomena which guarantees the *truths of fact* in respect to sensible things outside of us, is verified by means of the *truths of reason*; as the phenomena of optics are explained by geometry. It must, however, be admitted that none of this certitude is of the highest degree, as you have well recognized. For it is not impossible, metaphysically speaking, that there may be a dream continuous and lasting like the life of a man; but it is a thing as contrary to reason as would be the fiction of a book which should be formed by chance by throwing together the type pell-mell. For the rest, it is also true that, provided the phenomena are connected, it does not matter whether they are called dreams or not, since experience shows that we are not deceived in the measures we take concerning phenomena when they are understood according to the truths of reason.[1]

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[1] Simon Foucher, 1644–1696, a devoted student of the Platonic philosophy, in consequence of which he was called "the restorer of the philosophy of the Academy." His *Critique de la Recherche de la Vérité,* here mentioned by Leibnitz, appeared at Paris, 1675. It was based upon the sceptical principles of the Middle Academy, and was subjected to a very sharp criticism by Malebranche in the Preface to the next edition of the *Recherche de la Vérité.* Foucher also wrote *Dissertation sur la recherche de la vérité ou sur la philosophie des académiciens,* Paris, 1673, said to be his best work, and *De la Sagesse des anciens,* Paris, 1683. For Foucher's "objections" (published in the "Journal des Savans" of Sept. 12, 1695) to Leibnitz's doctrine of pre-established harmony as set forth in the *Système nouveau* ("Jour. des Savans," June 27, 1695), *cf.* Gerhardt, 1, 424, and 4, 487, Erdmann, 129, Dutens, 2, Pt. I., 102, trans. Duncan, 81; and for Leibnitz's reply ("Jour. des Savans," April 2 and 9, 1696), *cf.* G. 4, 493, E. 131, Dutens, 2, Pt. I., 67, trans. Duncan, 85. The correspondence of Foucher with Leibnitz was first published by Foucher de Careil in his *Lettres et opuscules inédits de Leibniz,* Paris, 1854, pp. 27–131 (*cf.* Introd. pp. 22–41, where the controversy over Malebranche is thoroughly considered), and more recently, 1875, after a new comparison with the originals in the Royal Library at Hannover, by Gerhardt, *Leibniz. philos. Schrift.,* 1, 363 *sq.* — Tr.

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[1] *Cf. ante*, pp. 64, note 2, 65, n. 3. Gassendi published on the life and phisophy of Epicurus: *De vita, moribus et doctrina Epicuri*, Lugd. Bat., 1647; *nimadversiones in libr. X. Diog. Laert. de Epicuro*, Lugd. Bat. 1649; *Syngma philos. Epicuri*, The Hague, 1655. For his philosophy, *cf.* his *Syntagma ilosophicum*, Vols. 1 and 2 of his *Opera omnia;* also Stöckl, *Gesch. d. Phis. d. Mittelalters*, III. [Vol. 4], 316–327; Lange, *Gesch. d. Materialismus*, ol. 1, Eng. trans. Vol. 1, pp. 253–269; R. Adamson, article "Gassendi," in *ncyclop. Brit.*, 9th ed. — Tr.

[2] *Cf. ante*, p. 126, note 1. On his life and philosophy, *cf.* Zeller, *Philos. d. riech.*, III., 1 [Vol. 5], 363 *sq.*, 3d ed., Leipzig, 1880; Lange, *Gesch. d. Materiismus*, Vol. 1, Eng. trans., Vol. 1, pp. 98 *sq.*; Benn, *The Greek Philosophers*, ol. 2, pp. 53 *sq.*; Wm. Wallace, *Epicureanism*, in the series of "Chief ncient Philosophies," pub. by the Society for promoting Christian Knowllge, London, 1880. — Tr.

[3] The *De la Recherche de la Vérité*, the principal work of Malebranche, 38–1715, appeared in 1674–1679. The most recent edition is that of F. Bouiler, with an introduction and notes, 2 vols., Paris, 1880. On Malebranche's ilosophy, *cf.* Bouillier, *Histoire de la Philos. Cartesienne*, Paris, 1854; Olléaprune, *La Philos. de Malebranche*, 2 vols., Paris, 1870–1872; Kuno Fischer, *esch. d. n. Philos.*, 3d ed., I., 1, Eng. trans. by J. P. Gordy, New York, Scribers, 1887; Martineau, *Types of Ethical Theory*, 2d ed., Vol. 1, p. 159 *sq.* For critical account of Malebranche's place in the history of philosophy, *cf.* dward Caird, article "Cartesianism," in *Encyclop. Brit.*, 9th ed. For Leibitz's correspondence with Malebranche, *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 315–361; for his discussion of Malebranche's philosophy, *cf.* Gerhardt, 3, 6–660, Erdmann, 735–737, Dutens, 2, Pt. I., 213, trans. Duncan, 233–237; G. 579–594 (*cf.* also 481–483), E. 690–697, D. 2, Pt. I., 201; G. 6, 574–578 (*cf.* also 0–483; Locke's examination of Malebranche is in his *Philos. Works*, Vol. 2, 3–458, Bohn's ed.), E. 450–452, trans. Duncan, 185–189. — Tr.

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[1] *Cf. New Essays*, Bk. III., chap. 4, § 2, Th., *ante*, pp. 318, 319, notes 1 and 2, and Bk. IV., chap. 11, § 10, Th., *infra*, p. 512. The principle of the "connection of the phenomena," their constant occurrence in the same order and relations, giving them a certain measure of objectivity in our consciousness and enabling us to predict the appearance of other members of the series when one member presents itself, is for Leibnitz the guarantee of the truth of our sense-knowledge and the ground of our greatest possible certainty therein;

§ 15. *Ph.* For the rest, knowledge is not always clear, though eas may be. A man who has as clear ideas as any mathe-atician in the world of the angles of a triangle and of equality o two right angles, may yet have a very obscure perception of heir agreement.

Th. [Ordinarily when ideas are thoroughly understood their greements and disagreements appear. I admit, however, that t times some of them are so complex, that much care is needed o develop what they conceal; and in this respect certain greements or disagreements may still remain obscure. As o your example, I remark that if we have in the imagination the angles of a triangle we do not on that account ave clear ideas of them. The imagination cannot furnish us n image common to acute-angled and obtuse-angled triangles, nd yet the idea of triangle is common to them: thus this dea does not consist in images and it is not as easy as you may think thoroughly to understand the angles of a triangle.]

CHAPTER III

OF THE EXTENT OF HUMAN KNOWLEDGE

§ 1. *Ph.* Our knowledge does not extend beyond our ideas, § 2. nor beyond the perception of their agreement or disagreement. § 3. It cannot always be intuitive, because we cannot always compare things immediately, for example, the size of two triangles upon one and the same base, equal, but very different. § 4. Our knowledge, also, cannot always be demonstrative, for we cannot always find mediate ideas. § 5. Finally, our sensitive knowledge regards only the existence of things which actually strike our senses. § 6. Thus not only our ideas are limited, but also our knowledge is more limited than our ideas. I do not doubt however that human knowledge can be carried much farther if men will devote them-

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but he holds that this guarantee is "verified," and the consecutions of experience supplemented, "by means of the truths of reason," and particularly by the use of the principles of logic. The position here taken is also that of the modern scientist, who keeps strictly within the scientific realm and does not pass on to consider the ultimate metaphysical nature and ground of the phenomena he investigates.—Tr.

selves sincerely to discovering the means of perfecting truth, with entire freedom of mind and with all the application and industry they employ in coloring or maintaining falsehood, in defending a system in favor of which they have declared themselves, or else a certain party and certain interests, with which they find themselves united. But after all our knowledge can never embrace all we may wish to know concerning the ideas we have. For example, we shall never perhaps be able to find a circle equal to a square, and know certainly that *it is so.*

Th. [There are confused ideas in which we cannot promise ourselves a complete knowledge, like those of certain sensible qualities. But when they are distinct, there is room to hope for all. As for the square equal to the circle, Archimedes has already shown that there is one. For it is the one whose side is the mean proportional between the semi-diameter and the semi-circumference. He has also determined a straight line equal to the circumference of the circle by means of a straight line tangent to the spiral, as others by the tangent to the quadratrix; a method of quadrature with which Clavius[1] was wholly content; not to speak of a thread applied to the circumference and then stretched out, or of the circumference which revolves to describe the cycloid and is changed to a straight line. Some demand that the construction be made by employing only the ruler and the compasses; but the majority of geometrical problems cannot be constructed by this means. The question then is rather that of finding the proportion between the square and the circle. But this proportion not being capable of expression in finite rational numbers, it has been necessary, in order to employ only rational numbers, to express this same proportion in an infinite series[2]

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[1] Christopher Clavius, 1537–1612, a Jesuit and distinguished mathematician, Professor of Mathematics at Rome, and called "the Euclid of the sixteenth century," was employed by Pope Gregory XIII. in the reformation of the calendar, for which he made the principal calculations. Among his works are: *Euclidis elementorum*, Rome, 1574; *Sinus lineæ tangentes*, etc., Rome, 1586, 4to; *Romani Calendarii a Gregorio XIII. P.M. restituti Explicatio*, Rome, 1603. His *Opera mathematica*, containing these and several other works, appeared at Mayence, 1612, 5 vols., fol. — TR.

[2] Leibnitz's infinite series, which, according to Schaarschmidt, he had discovered before he became acquainted with Huygens, and also before his discovery of the infinitesimal calculus, is $\frac{\pi}{4} = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} \cdots$, and

these numbers, which I have assigned in a manner quite
mple. Now we should like to know whether there is not
me finite quantity, although it be irrational only, or more
an irrational, which can express this infinite series, that is
say, whether we can find exactly an abbreviated expression
r this series. But finite, especially irrational, expressions, if
e proceed to the most irrational of all, may vary in too many
ays for us to be able to make an enumeration of them or to
termine easily all that they are capable of. There might be
rhaps a means of doing it if this irrationality should be ex-
ained by an ordinary, or even more, an extraordinary equa-

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related to unity it expresses the proportion obtaining between the circle
d the circumscribed square. *Cf. De vera proportione circuli ad quadratum
rcumscriptum in numeris rationalibus*, "Acta Erud. Lips.," February, 1682,
41 *sq.*, Gerhardt, *Leibniz. math. Schrift.*, II., 1 [Vol. 5], 118, Dutens, *Leib-
t. op. om.*, 3, 140 *sq.*; *Quadratura arithmetica*, "Acta Erud. Lip.," April,
91, p. 180, Gerhardt, *Leibniz. math. Schrift.*, II., 1 [Vol. 5], 130, Dutens,
242; also letter to Conring, Jan. 3, 1678, Gerhardt, *Leibniz. philos. Schrift.*,
187.

The problem of which Leibnitz here speaks is the modern form of the prob-
ms of the rectification and quadrature of the circle or the calculation and
nstruction of π and of a square mathematically exactly equal in area to a
ven circle. In referring to it he distinguishes between an "ordinary," or
gebraic, and an "extraordinary," or, as it is now termed, transcendental
uation. The problem is to prove that π cannot be the root of any equation
ving whole numbers for coefficients, or that π is not algebraical. The quad-
ture of the circle has long been known to be an unsolvable problem, — Leib-
tz knew this, — but the impossibility of its solution has only recently been
monstrated. Not until mathematicians possessed the methods furnished by
e theory of definite integrals and the departments of higher algebra devel-
ed in the last few decades was this demonstration possible. With the aid
these methods Prof. Lindemann of Königsberg succeeded, in June, 1882, in
monstrating with exactness the non-algebraic character of π, and thus
oved for the first time that the rectification and the squaring of the circle
ith ruler and compasses is impossible. For his proof, *cf. Über die Ludolph'sche
ahl*, in the "Sitzungsberichte d. köngl. Pr. Akad. d. Wiss., zu Berlin," June
, 1882, pp. 679–682; the "Comptes Rendus" of the French Academy, Vol.
5, pp. 72–74, "Math. Annalen," Vol. 20, pp. 213–225.

For an historical sketch of the problem of circle-quadrature, *cf.* Holtzen-
rff and Virchow, *Sammlung gemeinverständlicher wissenschaftlicher Vor-
äge*, Heft 67; an article from this by H. Schubert, in "The Monist," January,
91, Vol. 1, No. 2, pp. 197–228, reprinted in Smithsonian Report, 1890, pp. 97–
0; and the article "Squaring of the Circle," in the *Encyclop. Brit.*, 9th ed.,
ol. 22, pp. 450–454 (American Reprint). On Leibnitz's relation to the prob-
m, *cf.* Kummer, *Festrede am Leibniztage*, in the "Monatsberichte d. Pr.
kad. d. Wiss.," July, 1867, p. 387 *sq.*, an article which, while not directly
king into consideration the present interesting passage for the history of
athematics, is admirable in its understanding of the peculiarities of Leib-
tz's method of thought. — Tr.

tion, which would introduce the irrational or even the unknown quantity into the exponent,[1] for which, however, an extended calculation would be required, and in which the difficulty will not easily be solved unless we some day find a short method for its solution. But to exclude all the finite expressions is impossible, as I myself know, and to determine exactly the best is an immense task. And all this shows us that the human mind proposes questions so strange, especially when the infinite enters therein, that we must not be astonished if there is some difficulty in making them out, so much the more as all depends often on a short method in these geometrical matters, which cannot always be determined on, just as fractions cannot always be reduced to the lowest terms or the divisors of a number be found. It is true that we may always have these divisors if they are possible, because their number is finite; but when what we have to examine is infinitely variable and ascends by degrees, we are not its master though we wish to be, and it is too laborious to do all that is necessary in order to attempt methodically to reach the short method or the rule of progression exempting us from going farther. And as its usefulness does not correspond to the labor, its success is left to posterity, which will be able to enjoy it when this labor or prolixity is diminished by the new preparations and means which time may furnish. Unless the persons who devote themselves from time to time to these studies determine to do properly what is necessary in order to further progress, we cannot hope to advance much in a short time. And we must not think that all is done, since indeed in ordinary geometry, we still have no method for determining the *best constructions* when the problems are a little complex. A certain progression of synthesis should be mixed with our analysis in order the better to succeed. And I remember to have heard it said that the Pensionary De Witt[2] had some thoughts on this subject.]

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[1] *Cf.* Letter to Arnauld, Gerhardt, *Leibniz. philos. Schrift.*, 2, 61, 62, Janet, *Œuvres philos. de Leibniz*, 1, 622. — TR.

[2] John De Witt, 1625–1672, an illustrious Dutch statesman, was a steadfast opponent of the House of Orange, whose re-elevation to power in the United Provinces he labored earnestly and for many years successfully to prevent. His plans for his country were finally defeated by the diplomacy of Louis XIV., the opposition of the Calvinist clergy, and the change in the popular

Ph. There is, indeed, another difficulty, to know *whether a* *ırely material being thinks or not,*[1] and perhaps we shall never ; capable of knowing this, although we have ideas of *matter* ıd of *thought*, for the reason that it is impossible for us to scover by contemplation of our own ideas without revelation, hether God has not *given* to some masses of matter, fitly disposed, the *power* to perceive and to think, or whether he has ɔt united and joined to matter so disposed an immaterial ıbstance that thinks. For as regards our notions, it is no ore difficult for us to conceive that God, if he pleases, can ld to our idea of matter the faculty of thinking, than to understand that he joins to it another substance with the faculty of ıinking, since we know not *wherein thinking consists*, nor to hat kind of substance this all powerful Being has been eased *to give* that *power*, which cannot exist in any created ɛing save by virtue of the *good pleasure* and the bounty of ıe Creator.

Th. [This question is without doubt incomparably more ıportant than the preceding; but I venture to say to you, r, that I wish it were as easy to touch souls in order to fluence them for their good, and to heal bodies of their seases, as I think it is in our power to determine this question. I hope you will admit at least that I can advance *withıt offending against modesty* and *without speaking as a master* default of good reasons; for besides speaking only accordg to received and common opinion, I think I have brought ıereto an attention not common. In the first place, I grant ɔu, sir, that when we have only confused ideas of *thought* and *matter*, as is ordinarily the case, we must not be astonished we do not see the means of solving such questions. As I marked a little before, one who has only the ideas of the ıgles of a triangle commonly held will never think of finding

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eling towards the Prince of Orange, occasioned by the recollection of their untry's obligations to his ancestors. He was massacred, with his brother ɔrnelius, in the revolution which put the Prince William (afterwards William I. of England) at the head of the United Provinces. He published *Elementa ıearum curvarum*, Leyden, 1650; The Hague, 1709. — Tr.

[1] *Cf. ante*, p. 56 *sq.*, where Leibnitz shows that Locke afterwards gave up e opinion which he once advanced as possible that matter can think. For Leibtz, who regards matter as a mere phenomenon and not a reality, the question ɔes not exist. — Tr.

them always equal to two right angles. We must conside
that *matter* taken as a *complete being* (*i.e. secondary matter* i
distinction from the *primary*, which is something purely passiv
and consequently incomplete) is only a mass, or that whic
results therefrom, and that every *real mass* supposes *simpl*
substances or *real unities*, and when we further consider wha
belongs to the nature of these real unities, *i.e. perception* an
its consequences, we are transferred so to speak into anothe
world, that is to say into the *intelligible world of substance*
while before we have been only among the *phenomena of th*
senses. And this knowledge of the interior of matter show
us sufficiently its natural capability, and that whenever Go
shall give it organs suitable for rational expression, the immaterial substance which reasons will not fail to be given it also,
in virtue of that harmony which is also a natural consequence
of substances. Matter cannot subsist without immaterial
substances, *i.e.* without the unities; after which the question
should no longer be asked whether God is free to give them to
it or not; and if these substances had not in themselves this
correspondence or harmony of which I have just spoken, God
would not act in accordance with the natural order. To speak
in an entirely simple manner of *giving* or *according* powers is
to return to the *naked faculties* of the schoolmen and to imagine minute self-subsisting entities, which may go in and out
like pigeons from a pigeon-house. It is making substances of
them without being aware of it. The *primitive powers* constitute substances themselves, and the *derivative* powers, or, if
you prefer, the faculties, are only *modes of being*, which must
be derived from substances, and are not derived from matte
so long as it is only a machine, *i.e.* so long as it is abstractly
considered only as the *incomplete essence* of primary matter, o
passivity pure and simple. As to which I think you will
agree, sir, that it is not within the power of mere mechanism
to produce perception, sensation, reason. They must the
spring from some other substantial thing. To desire God t
act otherwise and to give to things accidents which are no
modes of being or modifications derived from substances, is t
have recourse to miracles and to what the schoolmen called th
obediential power, by a kind of supernatural exaltation, as whe
certain theologians claim that the fire of hell burns up sepa

ed souls. In which case it may indeed be doubted whether was the fire that acted or whether God did not himself oduce the effect, acting in place of the fire.]

Ph. You surprise me somewhat by your elucidations, and u anticipate me in many of the things I was going to say you upon the limits of our knowledge. I should have said you that we are not in a *state of vision*, as the theologians l it, that faith and probability must suffice us as regards ny things, and particularly as regards the *immateriality of soul;* that all the great ends of morality and religion are ablished upon sufficiently good foundations without the aid the proofs of this immateriality drawn from philosophy; l that it is evident that he who has begun to make us subt here as sensible and intelligent beings, and who has preved us many years in this state, can and will make us enjoy o a similar state of sensibility in the other life, and make capable of receiving there the retribution he has designed men according as they shall have conducted themselves in s life; in fine that we may judge by this that the necessity determine for or against the immateriality of the soul is not great as some people too zealous for their own views have shed to persuade us. [I was going to say all this to you, l more besides to the same effect, but I see now how differ is the statement that we are sensible, thinking, immortal ngs by nature and the statement that we are so only by mire. It is a miracle, in fact, which I know I must admit if the ıl is not immaterial; but this view of miracle, besides being thout foundation, will not produce a sufficiently good effect in minds of most people. I see clearly also from the way you derstand the matter, that we can decide rationally as regards present question, without finding it needful to depart to enjoyment of the *state of vision* and to find ourselves in the npany of those superior spirits who penetrate very deeply o the internal constitution of things and whose living and ıetrating sight and vast field of knowledge may make us agine by conjecture what happiness they must enjoy.] I l supposed it entirely beyond our knowledge *to combine sen ion with extended matter, and existence with a thing which has solutely no extension.* I had therefore become convinced that ose who took sides here followed the unreasonable method of certain persons, who, seeing that things considered from certain side are incomprehensible, throw themselves headlo upon the opposite side, although it is no less unintelligible; procedure which arose in my opinion from the fact that so having their mind too deeply buried so to speak in matt could not accord any existence to that which is not materi and others not finding that thought is included in the natu faculties of matter, concluded that God himself could not gi life and perception to a solid substance without putting there an immaterial substance; while I now see that if He had do so it would be by a miracle, and that this incomprehensibili of the union of the soul and the body or of the *union of sens tion with matter* seems to cease through your *hypothesis of p established harmony* between different substances.]

Th. [In fact there is nothing unintelligible in this ne hypothesis, since it attributes to the soul and to bodies on the modifications which we experience in ourselves and them; and only makes them appear more regular and mo connected than has been thought hitherto. The difficul which remains exists only as regards those who wish to *imagi* what is only *intelligible*,[1] as if they wished to see sounds or he colors, and these are they who *refuse existence to everythi which is not extended*, a view which will compel them to refu it to God himself, *i.e.* to renounce the causes and reasons changes and of such changes: these reasons being incapable arising from extension and from natures purely passiv and not indeed wholly from particular and inferior acti natures without the pure and universal act of the supren substance.]

Ph. One objection remains for me with reference to thin whose matter is naturally susceptible of feeling. The bo so far as we can conceive it, is capable only of striking a effecting a body, and motion can produce nothing but motio so that when we agree that the body produces pleasure pain or the idea of a color or sound, we seem compelled abandon our reason, to go beyond our own ideas, and to tribute this production solely to the *good pleasure* of o Creator. What reason have we then to conclude that it not the same with perception in matter? I almost see wh

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[1] *Cf. ante*, p. 274, note 2. — Tr.

›ly you can make, and although you have already said some- .ng regarding it more than once, I understand you better w, sir, than I have done. But I shall be very glad to hear ›ther what reply you will make regarding it upon this portant occasion.

Th. [You rightly judge, sir, that I shall say that matter ınnot produce pleasure, pain, or thought in us. It is the soul elf which produces them in conformity to what takes place matter. And some clever people among the moderns begin declare that they understand occasional causes only as I. ›w this being posited, there occurs nothing unintelligible, cept that we cannot distinguish all that enters into our con- sed perceptions, which contain even the infinite, and which the detailed expression of what occurs in bodies. As for *good pleasure* of the Creator, it must be said that he is led by the natures of things, so that he produces and con- ›ves therein only what suits them and can be explained, at ıst in general, by their natures; for the detail often sur- sses us as much as the care and power of arranging the ains of a mountain of sand according to the order of the ures, although there is here nothing difficult to understand t the multitude. Otherwise if this knowledge were in elf beyond us, and if we could not indeed conceive the rea- .n of the relations of the soul and body in general, in fine, God gave to things *accidental powers detached from their tures*, and consequently removed from reason in general, ›ere would be a back door for calling back the *too occult quali- s* which no mind can understand, and these little goblins of *›ulties* incapable of reason,

Et quidquid Schola finxit otiosa:

lpful goblins who proceed to appear like the gods of the eatre, or like the fairies of the Amadis, and who will do at need that a philosopher wishes, without ceremony and without ›ls. But to attribute the origin of these powers to the good easure of God appears to me a thing not quite congruous with m who is the supreme reason, with whom everything is gular, everything consistent. This good pleasure would not deed be *good*, nor *pleasure*, if there were not a perpetual rallelism between the power and the wisdom of God.]

§ 8. *Ph.* Our knowledge of *identity* and *diversity* goes as f as our ideas, but that of the connection of our ideas, §§ 9, 1 as regards their *coexistence* in one and the same subject very imperfect and almost nothing § 11. especially as regar secondary qualities as colors, sounds, and tastes § 12. becau we do not know their connection with the primary qualitie *i.e.* § 13. how they depend upon size, figure, or motion. § 1 We know a little more of the incompatibility of the seconda qualities; for a subject cannot have, for example, two colo at the same time, and when they seem to be seen in an opal in an infusion of *lignum nephriticum*, it is in different parts the object. § 16. It is the same with the active and passi powers of bodies. Our researches in this direction must depe on experience.

Th. [The ideas of sensible qualities are confused, and t powers which should produce them furnish in consequence on ideas into which some confusion enters: thus the connectio of these ideas can be known otherwise than by experien only as they are reduced to the distinct ideas which acco pany them, as has been done (for example) in regard to t colors of the rainbow and of prisms. And this method p sents a beginning in analysis which is of great use in physic and by following it I doubt not that medicine in time w find itself considerably more advanced, especially if the publ is a little better interested than hitherto.]

§ 18. *Ph.* As for the knowledge of relations it is the large field of our knowledge and it is difficult to determine how f it may extend. Progress depends on our sagacity in findi intermediate ideas. Those who are ignorant of *algebra* cann imagine the wonderful things that may be done in this fie by means of this science. And I do not see that it is easy determine what new means of perfecting other parts of knowledge may yet be found out by a penetrating mind. least the ideas regarding quantity are not the only ones capal of demonstration; there are others, perhaps *the most importa part of our contemplation*, from which we might deduce certa knowledge, if vices, passions, and domineering did not direct oppose the execution of such enterprise.

Th. [Nothing is truer than what you, sir, here say. Wh is there more important, supposing it is true, than what I l

re we have determined upon the nature of substance, upon
ty and multiplicity, upon identity and diversity, upon the
stitution of individuals, upon the impossibilities of void
l atoms, upon the origin of cohesion, upon the law of con-
uity, and the other laws of nature; but chiefly upon the
mony of things, the immateriality of souls, the union of
soul and the body, the conservation of souls, and even of
animal after death. And there is nothing in all this which
o not think demonstrated or demonstrable.]

Ph. [It is true that *your hypothesis* appears extremely con-
ent and of great simplicity: a clever man in France who
ired to refute it, admits publicly that he was impressed by
And it is a simplicity very different from that which I see.
will be well to show this doctrine more and more in its true
ht. But in speaking of things *which are of most importance*
us, I thought of morality to which I admit your metaphysic
es wonderful foundations: but without digging so deep, it
sufficiently firm foundations, although perhaps they do not
end as far (as I remember that you remarked) when a nat-
l theology like yours is not their base. Yet the considera-
n of the goods of this life alone already serves to establish
portant consequences for regulating human society. We
estimate justice and injustice as incontestably as in math-
atics; for example this proposition: *There cannot be injustice*
ere there is no property, is as certain as any demonstration
ich is in Euclid; *property* being the right to a certain thing,
l *injustice* the violation of a right. It is the same with this
position: *No government allows absolute liberty.* For *gov-*
ment is the establishment of certain laws, whose execution
lemands, and *absolute liberty* is the power each one has of
ng whatever he pleases.

Th. [You use the word *property* a little differently from its
linary use, for you mean by it the right of one person to a
ng to the exclusion of the right of another. Thus if there
re no property, as if all were common, there nevertheless
ght be injustice. By *thing* in the definition of property you
st also further understand action; for otherwise, if there
re therein no right to things, it would be always an injustice
prevent men from acting where they find it needful. But
cording to this explanation it is impossible that there be no

property. As for the proposition concerning the incompa
bility of government with absolute liberty, it belongs to t
number of the corollaries, *i.e.* the propositions, which it
sufficient to point out. There are some in jurisprudence whi
are more complex, as for example, those concerning what
called *jus accrescendi*,[1] concerning the conditions and ma
other matters; and I indicated them when I published
my youth some theses upon the *conditions*, in which I demo
strated some of them. And if I had leisure, I would retou
them.[2]]

Ph. [That would afford pleasure to the curious, and ser
to anticipate any one who might reprint them without
vision.]

Th. [That is what happened to my "Ars Combinatoria,"[3]
I have already complained. It was a fruit of my early yout
and yet it was reprinted a long time after without consulti
me and without indicating even that it was a second editio
and this made some think to my prejudice that I was capal

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[1] *Cf.* Poste, *Gaius*, *Elements of Roman Law*, Bk. II., 199 (p. 262, 3d e
Oxford, 1890): "Illud constat si duobus pluribusve per vindicationem ead
res legata sit, sive conjunctim, sive disjunctim, si omnes veniant ad legatu
partes ad singulos pertinere, et deficientis portionem collegatario adcrescer
Also Sandars, *Inst. of Justinian*, Lib. II., Tit. XX., 8 (p. 226, 8th ed., Lond
1888): "Si eadem res duobus legata sit, sive conjunctim sive disjunctim
ambo perveniant ad legatum, scinditur inter eos legatum; si alter defici
quia aut spreverit legatum, aut vivo testatore decesserit, vel alio quoli
modo defecerit, totum ad collegatarium pertinet."

In reference to the *jus accrescendi* — the law of increase — Sandars sa
p. 198: "If any one instituted heir died before the testator, or refused to ta
his share of the inheritance, his share was, in fact, undisposed of. But as
testator was always supposed to have disposed of his whole estate, if he
posed of any part, this share was divided among all those who entered on
inheritance *in proportions* corresponding to the share given them by the w
Their claim was called the '*jus accrescendi*.'" — Tr.

[2] Leibnitz here refers to his thesis *De conditionibus*, which he defend
under the presidency of Prof. Leonhard Schwendendörfer, at Leipzig, in 16
Guhrauer states (*cf. Leibniz, eine Biographie*, Pt. I., pp. 36–37) that we
not know the treatise in its original form, but in the revision and rearran
ment of its material made by Leibnitz in 1672, in a collection of his juris
treatises under the title *Specimina juris*, and which is found in Dutens, *L*
nit. op. om., 4, Pt. III., 92 *sq.* — Tr.

[3] The *Dissertatio de Arte Combinatoria*, *cf.* Gerhardt, 4, 27 *sq.*, Erdma
6 *sq.*, Dutens, 2, Pt. I., 341 *sq.*, appeared at Leipzig in 1666. The pirated
tion here referred to by Leibnitz was published at Frankfort, 1690, and
viewed by him in the "Acta Erud.," February, 1691. *Cf.* Guhrauer, *Leib*
eine Biog., Pt. I., pp. 37–38, and *Anmerkungen z. erst. Buche*, pp. 7,
Dutens, 6, 295. — Tr.

publishing such a piece in my mature years; for although contains thoughts of some consequence, which I still apove, it also contains some which could become only a young dent.]

§ 19. *Ph.* I find that diagrams are a great remedy for the certainty of words, but they cannot have place in moral eas. Most moral ideas are more complex than the diagrams dinarily considered in mathematics; thus the mind finds it fficult to retain the precise combinations of what enters into oral ideas, in a manner as perfect as is necessary in long dections. And if in arithmetic the different stages are not signated by marks whose precise meaning is known, and ich last and remain in sight, it is well-nigh impossible to ke extended computations. § 20. Definitions furnish some medy provided they are constantly employed in ethics. And r the rest, it is not easy to foresee what methods may be ggested by *algebra* or by some other means of this nature to move other difficulties.

Th. [The late Erhard Weigel,[1] a mathematician of Jena in uringia, ingeniously invented diagrams to represent moral ings; and when the late Samuel Puffendorf,[2] his disciple, pub-

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[1] Erhard Weigel, 1625–1699, a distinguished German mathematician and ronomer, was professor of mathematics in Jena from 1653 on, where he was ibnitz's first teacher in the subject, when he studied there in 1663, *cf.* hrauer *Leibniz. eine Biographie*, Pt. I., pp. 26, 32. The Diet of Ratisbon pointed him to organize a commission for the correction of the calendar. also labored earnestly for the reform of the school system in Germany, velling through the country in 1696 for this purpose, *cf.* Guhrauer, *op. cit.*, II., pp. 211–214, and the correspondence of Leibnitz and Placcius, from b. 12, 1696 on, Dutens, *Leibnit. op. om.*, 6, 61 *sq.*

Weigel, who was a philosopher, moralist, and an original investigator of law of nature (*Naturrecht*) as well as a mathematician, published many rks, among them the *Exposé arithmétique de la morale*, or, as the German le runs, *Arithmetische Beschreibung der Moralweisheit von Personen und chen, woraus das gemeine Wesen besteht, nach der pythagorischen Kreutzhl in lauter tetraktische Glieder eingetheilt*, Jena, 1674, 4to, in which he empted a mathematical exposition of moral philosophy, based upon the thagorean principle that the essence of things consists in numbers. Leibnitz us speaks of this book in the *Miscellanea*, No. CLIII., Dutens, 6, 325: "M. *eigelius* a fait un excellent livre en Allemand sur la morale éclairée par nombres, et je ne crois pas que les Pythagoriciens ayent rien dit de plus au sur ce chapitre." For further remarks of Leibnitz on Weigel, *cf.* hrauer, *Leibnitz's deutsche Schriften*, 2, 473 *sq.* — Tr.

[2] Samuel Pufendorf, 1632–1694, was one of the greatest German publicists d historians, and one of the founders of the science of public law. He died at Jena under Weigel, with whom he formed an intimate friendship,

lished his "Elements of universal Jurisprudence" sufficien
conformed to the thoughts of Weigel, there was added ther
in the Jena edition the "*Moral Sphere*" of this mathematici
But these diagrams are a kind of allegory nearly like the ta
of Cebes,[1] but less popular and serving the memory in the
tention and arrangement of its ideas rather than the judgme
in the acquisition of demonstrative knowledge. They do r
cease to have their use in arousing the mind. Geometri
diagrams appear simpler than moral things; but they are r
so, because continuity includes the infinite from which it mu
be chosen. For example, to cut a triangle into four equ
parts by two straight lines perpendicular to each other is
question apparently simple but really quite difficult. It is n
the same in questions of morality since they are determinab

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and to whose teaching and influence he largely owes the orderly method a
mathematical precision and dryness which characterize his style, and th
independence of character which never yielded to the "ipsedixitism" of oth
writers, however high their position and authority. Among his works ar
Elementa jurisprudentiæ universalis, cum appendice de Sphæra morali (
Weigel), Hag. Com., 1660, 12mo — also Jena, 1660, "bei Meyer"; the ed. he
meant by Leibnitz, according to Schaarschmidt, who states that in the
Jena ed., 1669, the *Sphæra moralis* occurs, p. 313 *sq.*, — the book which obtain
for him from the elector Charles Louis, to whom it was dedicated, the new
created chair of the law of nature and of nations at Heidelberg; *De sta
imperii germanici*, Geneva, 1667, — the book which first called forth Leibnitz
aversion and criticism, — small in bulk, but great in significance, in which
criticised the political organization of the empire, suggested a remedy for t
evils therein, and revealed himself as a consummate statesman, subseque
events proving the justness of his conclusions; and the work on which h
fame chiefly rests, *De jure naturæ et gentium*, 1672, trans. into French, wi
notes, by Barbeyrac, Amsterdam, 1712, and into English by Basil Kenne
London, 1729, and résumé of the same, *De officio hominis et civis*, 1675.

For Leibnitz's criticism of Pufendorf and his work, — the severest, perha
he ever made on any one, and through which he is, to a considerable exte
responsible for the failure of posterity justly to estimate and acknowled
its debt to him, — *cf.* letter to Kestner, No. 7, § 2, Dutens, 4, Pt. III., 26
Monita quædam ad S. Puffendorfii principia, ibid., 275–283; letter to S. Ko
tholt, No. 3, Dutens, 5, 305; letters to Bierling, Gerhardt, *Leibniz. phil
Schrift.*, 7, 487, 488, 490, 499, 506, 511, Dutens, 5, 355, 358, 361, 371, 386, 390
Dutens gives Bierling's letters to Leibnitz also; letter to Bourguet, G. 3, 5
Erdmann, 734, b., Dutens, 2, Pt. I., 334. For a comparison of the views
Leibnitz and Pufendorf on the ultimate foundations of natural and public la
cf. Monita quædam above cited, and Guhrauer, *Leibniz. eine Biog.*, Pt. I., 2
sq. — Tr.

[1] Cebes of Thebes, a disciple of Socrates, distinguished for his virtue a
love of truth; *cf.* Plato, *Phædo*, 59 C, 60 C *sq.*, 63 A. His Πίναξ, *Tabul*
or 'picture,' is, according to Zeller, *Philos. d. Griech.*, II., 1 [Vol. 3], 242, 4
ed., 1889, "certainly spurious." — Tr.

reason alone. For the rest it is not the place here to speak *proferendis scientiae demonstrandi pomoeriis,* and to propose ie means of extending the art of demonstration beyond its cient boundaries which have been nearly the same up to the esent time as those of mathematics. If God gives me the ne necessary for it, I hope some day to publish an essay on this subject, putting these means into effective use witht limiting myself to precepts.][1]

Ph. [If you carry out this plan, sir, and as it should be, u will infinitely oblige the *Philalethes* like myself, *i.e.* the class ho sincerely desire to know the truth.] For truth is naturally reeable to the mind, and there is nothing so deformed and incompatible with the understanding as a lie. But men ust not be expected to apply themselves much to these scoveries, so long as the desire and the esteem of riches or power shall lead them to espouse opinions authorized by shion, and to seek in consequence arguments either to make em pass as good or to varnish over and cover their deformy. And while the different parties make all men whom they n get into their power receive their opinions without examing whether they are true or false, what new light can be ped for in the sciences belonging to morals? This part of e human race which is under the yoke, ought to expect in ost places in the world instead of that light, darkness as ick as that of Egypt, were not the candle of the Lord itself und present in the mind of men,[2] a sacred light which all man power cannot wholly extinguish.

Th. [I do not despair that at some time and in a more tranil country men will betake themselves more to reason than ey have done. For in fact we must despair of nothing; and

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[1] Leibnitz's plan to extend and perfect the science of demonstration, or that rt of logic which is concerned with the methods of proof, and which in his ew was conceived up to his own time too narrowly as virtually identical ith the method of mathematics, is closely connected, but not identical, with s Universal Characteristic; *cf. ante,* pp. 292, note 1, 375, note 1. Leibnitz, wever, never carried his plan into execution, but left some preliminary says or sketches which serve to indicate what he thought desirable in this rection, and what he purposed himself some day to provide. *Cf. Préceptes ur avancer les sciences,* Erdmann, *Leibnit. op. philos.* 165–171, published in more complete form in Gerhardt, *Leibniz. philos. Schrift.*, 7, 157 *sq.;* and e fragment without title treating of the means of philosophical demonstran, G., 7, 299–301. — Tr.

[2] *Cf.* Proverbs 20 : 27. — Tr.

I believe that great changes for evil and for good are reserved for the human race, but in the end more for good than for evil. Suppose we see some day a great prince, who, like the ancient kings of Assyria or of Egypt or like another Solomon reigns a long time in a profound peace, and that this prince loving virtue and truth and endowed with a great and solid mind, takes it into his head to make men happier and more accommodating among themselves and more powerful over nature; what wonders will he not do in a few years? For i is certain that in this case more would be done in ten years than in a hundred or perhaps a thousand while letting things follow their ordinary course. Moreover, if the path were opened once for all, many people would enter therein as the geometers do, though this would be only for their pleasure and to acquire fame. The public better civilized wil some day turn more than it has hitherto done to the advancement of medicine; natural histories of all countries will b published like almanacs or like the *Mercures galans;*[1] no valuable observation will be left without being registered; those who will apply themselves thereto will be aided; the art o making such observations will be perfected, and further tha of employing them to establish aphorisms. The time wil come when the number of good physicians having become greater and the number of people of certain professions o which there will then be less need having become proportionally less, the public will be in a condition to give more encouragement to natural research, and above all to the advance of medicine, and then this important science will b carried far beyond its present condition and will grow apace I believe indeed that this business of the police should b the object of the greatest care of those who govern, after tha of virtue, and that one of the greatest fruits of good moral or politics will be to produce a better (science of) medicine

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[1] "Mercure galant," the title of different periodicals treating of politic literature, and containing announcements, and news of various kinds; in particular, the title of a journal founded by De Visé in 1672, and continued, wit several short periods of suspension, under various names and editors, till 185 Leibnitz, in a letter to Sebastian Kortholt, Jan. 9, 1711, inquires whether complete set can be obtained, and at what price: "Discere etiam velim, a totus *Mercurius Gallant*, ut sic dicam, vulgo *Mercure Galant* a *Devisæo* nupe extincto a multis annis compositus, tolerabili pretio haberi possit, et quanti? (*cf.* Dutens, *Leibnit. op. om.* 5, 315). — Tr.

hen men shall begin to be wiser than they are and the no-
lity shall learn the better to employ their wealth and their
wer for their own welfare.]

§ 21. *Ph.* As for the knowledge of *real existence* (which is
e fourth kind of *knowledge*) it must be said that we have an
tuitive knowledge *of our existence,* a *demonstrative* knowledge
that of God, and a *sensitive* knowledge *of other things.* We
all speak of these fully in what follows.

Th. [You could say nothing more justly.]

§ 22. *Ph.* Having now spoken of *knowledge,* it appears ap-
opriate the better to discover the present condition of our
ind that we should consider a little the dark side and take
owledge of *our ignorance:* for it is infinitely greater than
r knowledge. The *causes* of this ignorance are as follows:
) Want of ideas; (2) Inability to discover the connection
tween the ideas we have; (3) Neglect to trace and examine
em with exactness. § 23. As for the *want of ideas,* we have
simple ideas only those coming to us from the senses [in-
rnal or external]. Thus as regards an infinite number of
e creatures of the universe and their qualities we are like
e blind as regards colors not indeed possessing the faculties
cessary in order to their knowledge; and according to all
pearances man holds the lowest rank among intellectual
ings.

Th. [I do not know but that there are also some below us.
hy should we degrade ourselves unnecessarily? Perhaps we
ld a sufficiently honorable rank among rational animals;
r superior genii may have bodies of another kind so that
e name animal cannot agree with them. We cannot say
hether our sun among the great number of other suns has
ore above than below it, and we are well placed in his sys-
m: for the earth occupies the middle course between the
anets, and its distance appears well chosen for a contem-
ative animal who should inhabit it. Besides we have in-
mparably more reason to praise than to complain of our lot,
e majority of our evils rightly being imputed to our fault.
bove all we should be very wrong to complain of the defects
our knowledge, since we avail ourselves so little of that
hich charitable nature presents to us.]

§ 24. *Ph.* It is, however, true that the extreme distance of nearly all parts of the world which are exposed to our sigh conceals them from our knowledge, and apparently the visibl world is only a small part of this immense universe. We ar confined in a small corner of space, *i.e.* in the system of ou sun, and yet we do not know even what takes place in th other planets which as well as our ball revolve about it § 25. This knowledge escapes us by reason of size and distance; but other bodies are concealed from us because of thei minuteness; and these are the ones which it would most concern us to know; for from their contexture we could infer th use and operation of those which are visible, and know why rhubarb purges, hemlock kills, and opium produces sleep. Thus § 26. whatever distance human industry may advanc experimental philosophy upon physical things, I am compelle to believe that we can attain upon these matters a *scientifi knowledge.*

Th. [I fully believe that we shall never advance so far as will be desirable; but it seems to me that some considerabl progress will be made in time in the explication of certain phenomena, because the large number of experiments which we are led to make may furnish us *data* more than sufficient, so that only the art of employing them will be lacking, (an art) the small beginnings of which I do not despair of seeing pushed forward, since the *infinitesimal analysis*[1] has given us the means of uniting geometry with physics, and *dynamics* has furnished us with the general laws of nature.]

§ 27. *Ph.* Spirits are still further removed from our knowledge; we cannot form any idea of their different orders, and yet the *intellectual world* is certainly grander and more beautiful than the material world.

Th. [These worlds are always perfectly parallel as regards efficient causes, but not as regards final. For in proportion as spirits rule in matter they produce therein wonderful arrangements. This appears in the changes men have made, in order to embellish the earth, as little gods imitating the great architect of the universe, though only by employing bodies and eir laws. What may not be conjectured concerning this ımense multitude of spirits which surpass us? And as irits form all together a kind of state under God, whose govnment is perfect, we are far removed from comprehending e system of this intelligible world and from conceiving the ınishments and rewards prepared for those who deserve em according to the most exact standard, and from imaging what eye has not seen, nor ear heard, nor has ever entered to the heart of man. But all this shows that we have all e distinct ideas necessary for knowing bodies and spirits, ıt not sufficient detail of facts, nor senses penetrating enough distinguish confused ideas or sufficiently extended to perive them all.]

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[1] Sir Isaac Newton, 1642–1727, in his *Principia*, was the first to apply in a systematic way the infinitesimal calculus to physics, after that Galileo, 1564–1642, had paved the way for a theory of universal gravitation by his determination of the law of acceleration in falling bodies. — Tr.

§ 28. *Ph.* As for the connection, the knowledge of which wanting to us in the ideas which we have, I was going to y to you that the mechanical affections of bodies have no mnection with the ideas of colors, sounds, smells, tastes, easure, and pain; and that their connection depends only oon the good pleasure and the arbitrary will of God. But I member that you think there is a perfect *correspondence,* though this is not always an entire *resemblance.* But you cognize that the too great detail of small things entering ıerein hinders us from discerning that which is concealed, ıough you hope still that we shall make much advance there; and that thus you do not wish to say with my illustrious ıthor (§ 29), that *it is labor lost to engage in such a search,* from ar that this belief would injure the growth of science. I ıould have spoken also of the difficulty which has hitherto en found in explaining the connection between the soul and ıe body, since a thought cannot be conceived as producing a otion in the body, nor a motion as producing a thought in ıe mind. [But since I comprehend your hypothesis of pretablished harmony, this difficulty of which they despaired opears to me removed at once, and as it were, by magic.]

30. There remains then the third cause of our ignorance, iz. that we do not follow the ideas we have or may have, ıd do not apply ourselves to finding intermediate ideas. hus it is that we are ignorant of mathematical truths, alıough there is no imperfection in our faculties, nor any ıcertitude in the things themselves. The bad use of words

has contributed the most to prevent us from finding the agreement or disagreement of ideas; and the mathematicians wh form their thoughts independently of names and accuston themselves to present to their minds *the ideas themselves* instead of their sounds, have thereby escaped a great deal o embarrassment. If men had acted in their discoveries in th material world as they have been wont to do in regard t those having reference to the intellectual world, and if the had been wholly lost in a chaos of terms of an uncertain meaning, they would have disputed endlessly about the zones, th tides, the building of vessels, and the routes; they woul never have gone beyond the line, and the antipodes woul still be as unknown as they were when to maintain them wa declared a heresy.

Th. [This third cause of our ignorance is the only blamabl one; and you see, sir, that the despair of further advance i therein contained. This discouragement does much injury and persons of ability and importance have hindered th progress of medicine by the false persuasion that it is labo lost to work therein. When you see the Aristotelian philosophers of past time speak of meteors, as the rainbow, fo example, you will find that they believed they should no think alone of explaining distinctly this phenomenon; and th attempts of Maurolycus,[1] and afterwards of Marc Antony d Dominis[2] appeared to them like the flight of Icarus. But th

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[1] Francesco Maurolico, 1494–1575, a celebrated Italian mathematiciar whose father, a Greek, came originally from Constantinople, taught mathematics at Palermo, Naples, Rome, and Messina. In his *Treatise on Conics* h sought for the first time to deduce the properties of these curves from th corresponding curves in the circle of which they are the perspective. He firs introduced secants into trigonometrical calculations, constructing and publishing a table of them in his *Theodosii sphæricorum*, Messina, 1558, fol. He als investigated the structure of the eye, seeking therein the explanation of th phenomena of vision. He described exactly the course of the rays of ligh across the cornea and the crystalline lens, but stopped in utter astonishmen when he discovered that his theory led him to admit that the images of object upon the retina are found inverted. The work of Maurolico, here referred to b Leibnitz, is his *Problemata ad perspectivam et iridem pertinentia*, appende to his *Photismi* [or *Theoremata*] *de lumine et umbra ad perspectivam radiorun incidentium*, Venice, 1575, 4to, new ed., with notes of Clavius, Lyons, 1613.—Tr

[2] M. Ant. de Dominis, 1566–1624, a native of Dalmatia, was professor o eloquence, philosophy, and natural sciences at the University of Padua Though archbishop of Spalatro, he was republican in his views of the constitution and administration of the church and strongly opposed to the doctrin

quel has disabused the world of this. It is true that the
d use of terms has caused a good part of the confusion
and in our knowledge, not only in ethics and metaphysics,
in what is called the intellectual world, but also in medi-
ne where this abuse of terms increases more and more. We
nnot always aid ourselves with figures as in geometry: but
gebra shows us that great discoveries may be made without
curring always to the ideas themselves of things. In ref-
ence to the pretended heresy about the antipodes I will say
passing that it is true that Boniface,[1] Archbishop of May-
ce, accused Virgil of Salzburg,[2] in a letter, which he wrote

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papal supremacy. While in England he published his views in his *De*
ublica ecclesiastica, London, 1617–1620, reprinted Frankfort, 1658, both eds.,
vols., fol. For some specimen quotations from this book, *cf.* Larousse,
ande Dict. Univ. de XIX^e^ Siecle, Vol. 6, p. 1068, a. Returning to Italy, he
d his book were condemned as heretical, in spite of his retraction of his
ors, and he was imprisoned, and probably poisoned, in the Castle of St.
gelo, and his body exhumed and burned with great ceremony in the Campo
' Fiori in Rome in January, 1625.

In his *De radiis visus et lucis in vitris perspectivis et iride*, Venice, 1611,
, cited with high praise by Newton in his *Optics*, he presented to the world
first attempt at a theory of the rainbow. He successfully reflected rays
light through the interior of raindrops before making them come out again,
t could not account for the angle at which the observer sees the ray of the
w. On his theory, *cf.* Venturi, *Commentarii sopra la storia e le teorie dell'*
ica, Bologna, 1814, Vol. 1, p. 149. Of the *De radiis visus et lucis*, chap. 9
d chap. 13, "*Vera iridis tota generatio explicatur*," are printed in Libri,
stoire des Sciences math. en Italie depuis la Renaissance jusqu'à la fin du
VII^e^ siècle, 1838–1841, 4 vols., 8vo, Vol. 4, p. 436 *sq*. Leibnitz thus speaks
him in the *Miscellanea Leibnitiana*, ed. Feller, No. CXV., p. 198 (*cf.* also
tens, *Leibnit. op. om.*, 6, 319): "Elegantissime materiam tractavit de-
onstrationibusque mathematicis confirmavit. Iridis etiam et nonnullorum
orum ejusmodi meteorum causam ab Aristotele assignatam recte ex-
ndit." — TR.

[1] Boniface (Winfrid, the Anglo-Saxon Benedictine monk, named *Bonifa-*
us by Pope Gregory II.), 680–755, the apostle to the Germans, became arch-
hop of Mayence (Mainz) in 748. On his life and labors, *cf.* Neander, *Hist.*
the Christ. Relig. and Church, 3, 46 *sq.*; Smith and Wace, *Dict. of Christ.*
og., Vol. 1, p. 324. His *Opera quæ extant omnia*, ed. J. A. Giles, Londini,
44, 2 vols., 8vo; also in Migne, *Patrol. s. Lat.*, Vol. 89, Paris, 1863. His
ters were edited, with notes, by the Jesuit Nic. Serarius, 1555–1609, Mayence,
05 and 1629, 4to; and by Würdtwein, Moguntiæ, 1789, fol. — TR.

[2] St. Fergil, best known by the Latinized form of his name, — Virgilius, —
s an Irish priest from Aghavoe, Queen's Co., who came to Bavaria, became
first abbot of St. Peter's monastery in Salzburg, and finally, on the martyr-
m of Boniface, 755, and the death of John, bishop of Salzburg, was appointed
d consecrated bishop, June 13, 766 or 767. One of his last acts as bishop was
visit his entire diocese and to pay a long deferred visit to Carinthia. He
ed Nov. 27, 789.

to the Pope against him on this subject, and that the Po replied thereto in a way which showed that he employed t term quite in the sense of Boniface; but it does not appe that this accusation has had any results. Virgil has alwa held his own. The two antagonists pass for saints, and t savants of Bavaria who regard Virgil as an apostle of Cari thia and the neighboring countries, have justified their memory of him.]

CHAPTER IV

OF THE REALITY OF OUR KNOWLEDGE

§ 1. *Ph.* Some one who has not understood the importan of having good ideas, and of understanding their agreeme or disagreement, will think that in reasoning upon them carefully we have been building castles in the air, and that the will be in our entire system only the ideal and imaginary. A extravagant man, whose imagination is heated, will have t advantage of possessing ideas more vivid and in greater num ber, thus he would also have more knowledge. There will as much certitude in the visions of an enthusiast as in t

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Virgil was involved in two controversies with Boniface. First, in regard the validity of an informally administered baptism in which the officiati and ignorant priest had mutilated the Latin formula. Boniface said the ba tism was invalid, and must be repeated; Virgil maintained its validity, a on his appeal to Pope Zachary (741–752), was sustained. Second, in regard the "antipodes" here mentioned. Virgil published a philosophical treati maintaining the rotundity of the earth and the antipodes, which Bonifa regarded as heretical because the view advanced was thought to imply t existence of two races of men, one of which did not spring from Adam, w therefore free from original sin, and had no need for or share in the work the Redeemer. Pope Zachary, in the letter to Boniface here referred to (c letters of Boniface, No. 140, in *Bibl. Max. Vet. Patr.*, 27 vols., fol. Lugd., 167 Vol. 13, p. 131–133), characterized as perverse and heretical the doctrine another world and other men under the earth, — "De perversa doctrina, qua contra Dominum et animam suam locutus est (quod scilicet alius mundu et alii homines sub terra sint aliusque sol et luna)," etc.; but Virgil showe that his speculations were purely scientific and did not touch the theologic doctrines of original sin or the unity of the human race. He was accordingl acquitted of the charge of heresy, and canonized by Gregory IX. in 1233. C Smith and Wace, *Dict. of Christian Biog.*, Vol. 4, pp. 1160, 1211, Londo 1887; Neander, *Hist. of the Christ. Relig. and Church*, 3, 63; also Bayle, *Dic histor. et crit.*, 2d ed., 1702 (which was, perhaps, Leibnitz's source of info mation on the subject), Eng. Trans., London, 1738, Vol. 5, p. 493; and for justification of Virgil, *cf.* "Mémoires de Trévoux," Jan. 1708. — TR.

asonings of a sober man, provided this enthusiast speaks nsistently; and it will be as true to say that a harpy is not centaur as to say a square is not a circle. § 2. I reply that ir ideas agree with things. § 3. But the *criterion* will be manded. § 4. I reply further *in the first place* that this reement is manifest as regards the simple ideas of our mind, r being unable to form them itself, it must be that they are oduced by things acting upon the mind; and *in the second ace*, § 5. all our complex ideas (those of substances excepted) ing archetypes which the mind itself has made, not intended be copies of anything nor referred to the existence of any- ing as to their originals, they cannot fail to be completely nformed to the things necessary to real knowledge.

Th. Our certitude would be small, or rather nothing, if it d no other basis of simple ideas than that which comes from e senses. Have you forgotten, sir, how I have shown that eas are originally in our mind, and that indeed our thoughts me to us from the depths of our own nature, other creatures ing unable to have an immediate influence upon the soul. sides the ground of our certitude in regard to universal d eternal truths is in the ideas themselves, independently the senses, just as ideas pure and intelligible do not depend the senses, for example, that of being, unity, identity, etc. t the ideas of sensible qualities, as color, savor, etc. (which reality are only phantoms),[1] come to us from the senses, . from our confused perceptions. And the basis of the truth contingent and singular things is in the succession which uses these phenomena of the senses to be rightly united as intelligible truths demand.[2] That is the difference which should be made, while that which you here make between simple and complex ideas, and ideas complex belonging to substances and to accidents, does not appear to me well founded, since all intelligible ideas have their archetypes in the eterna possibility of things.]

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[1] *Cf. ante*, p. 317 (where the term "phantasies," in line 12, rendered by the rd "notions," would have been better rendered, perhaps, by "phantasms" 'phantoms"), notes 1 and 2, and *infra*, p. 459. Schaarschmidt translates: hantasie-Erscheinungen." The term "phantom," or, as it might perhaps e been translated, "phantasm,"—the Greek φάντασμα, and the Scholastic antasma,"—signifies here a mental modification given or produced ugh the agency of the senses, but having no corresponding external ect, *i.e.* an entirely subjective phenomenon, real as such, but which, since orresponds to no objective external reality, has, to a certain extent, the racter of a mere appearance.—Tr.

[2] *Cf. New Essays*, Bk. IV., chap. 2, § 14, Th. (2), *ante*, p. 422, note 1. nitz felt, says Schaarschmidt, that we could not be satisfied from a philo- ical point of view with the old definition of truth as consisting in the eement of thought with reality.—Tr.

§ 5. *Ph.* It is true that our complex ideas need archetypes outside the mind only when the question concerns an existing substance which must effectively unite outside us these complex ideas, and the simple ideas of which they are composed The knowledge of mathematical truths is real, although it revolves only upon our ideas, and finds nowhere exact circles But we are assured that existing things will agree with ou archetypes according as what we suppose therein is foun existing. § 7. This serves to justify the reality of mora things. § 8. Nor are Cicero's "Offices" less conformed t truth, because no one in the world rules his life exactl according to the pattern of a virtuous man such as Cicero ha painted for us. § 9. But (it will be said) if moral ideas be c our invention, what a strange notion shall we have of justic and temperance?

§ 10. I reply that the uncertainty will be only in the language, because what is said is not always understood, always understood in the same way.

Th. [You might reply also, sir, and much better in m opinion, that the ideas of justice and temperance are not our invention, any more than those of the circle or t square. I think I have sufficiently shown this.]

§ 11. *Ph.* As for the ideas of substances existing outsi us, our knowledge is real so long as it is conformed to the archetypes; and in this respect the mind must not combi ideas arbitrarily, so much the more as there are very few simple ideas of which we can be certain that they can or cann exist together in nature beyond what appears by sensib observations.

Th. It is, as I have more than once said, because the ideas, when reason cannot judge of their compatibility or connection, are confused, like those of the particular qualit of the senses.

§ 13. *Ph.* It is well also as regards existing substances it to limit ourselves to names or to species supposed to be esta ished by names. This makes me return to discussions we ave often enough had regarding the definition of man. For peaking of an *innocent*[1] who has lived forty years without givng the least sign of reason, could we not say that he holds he middle place between man and beast? It would possibly e thought a very bold paradox, or even a falsehood with very langerous consequences. But it seemed to me formerly and t seems still to some of my friends whom I cannot disabuse s yet (of the idea) that it is only in virtue of a prejudice ased upon this false supposition that these two names *man* nd *beast* signify distinct species, so well marked by real ssences in nature that no other species can intervene between hem, as if all things were thrown into the mould according o the precise number of these essences. § 14. When these riends are asked what species of animals these *innocents* are, f they are neither men nor beasts, they reply they are *innocents*, nd that is sufficient. If asked further what they will become n the next world, our friends reply they are not concerned to now or inquire. *Let them fall or stand to their own master* Rom. 14:4), who is good and faithful and disposes of his reatures not according to the narrow limits of our particular houghts or opinions, nor does he distinguish them conformably o the names and species *it has pleased us to invent;* let it suffice s that those who are capable of instruction will be called to ender an account of their conduct and will receive their revard *according to the deeds done in their bodies* (2 Cor. 5:10). 15. I shall exhibit to you the rest of their reasonings. The uestion (say they) *whether imbeciles must be deprived of a future tate* rests upon two equally false *suppositions: first* that every eing having the form and external appearance of man is estined to an immortal state after this life; and *second* that verything having a human birth must enjoy this privilege. emove these imaginative ideas, and you will see that such uestions are ridiculous and groundless. In fact I think we hall disallow the first supposition and shall not have the mind o buried in matter as to believe that eternal life is due to any orm of material mass, so that the mass must have feeling ternally because moulded upon such a figure. § 16. But the

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[1] Locke's word is "changeling," *Philos. Works* (Bohn's ed.), Vol. 2, p. 176 q., and note. — TR.

second supposition comes to the rescue. We shall say that this *innocent* comes from rational parents and that consequently it must have a rational soul. I know not by what rule of logic we can establish such a consequence, nor how after that we should dare to *destroy* these ill-formed and disfigured productions. Oh, they are *monsters*, it will be said. Very well, so be it. But what will this always intractable innocent be? Shall a defect in the body make a monster, and not a defect in the mind? This is to return to *the first supposition*, already refuted, that the external suffices. A well-formed innocent is a man, as we believe; he has a rational soul, although it does not appear; but make the ears a little longer and more pointed, and the nose a little flatter than usual, then you begin to hesitate. Make the face narrower, flatter, and longer; there you are all at once decided. And if the head is perfectly that of any animal, it is no doubt a monster; and this is for you a demonstration that it has no rational soul and that it should be *destroyed*. I ask you now where to find the just measure and the final limits bearing with them a rational soul. There are human *fœtuses*, half beast, half man, others three parts of which belong to the one, and one part to the other. How determine precisely the lineaments which indicate reason? Further, will not this *monster* be a species midway between man and beast? And such is the *innocent* in question.

Th. [I am astonished that you return to this question sufficiently examined by us, and that more than once, and that you have not better catechized your friends. If we distinguish the man from the beast by the faculty of reason, there is no middle ground, the animal in question must have it or not have it; but as this faculty sometimes does not appear, we judge of it by indices which are not demonstrative of the truth till this reason manifests itself: for we know by the experience of those who have lost it and who at last have recovered its exercise, that its function may be suspended. Birth and form furnish presumptions of that which is concealed. But the presumption of birth is effaced (*eliditur*) by a figure very different from the human, such as that of the animal was, born of a woman of Zealand according to Levinus Lemnius

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[1] Livin Lemmens — Latin, Levinus Lemnius — 1505–1568, a Dutch physician who was very successful in practice, and had in his time a very great reputa

Book I., Chap. 8), which had a hooked beak, a long and ound neck, flashing eyes, a pointed tail, and great agility t first in running about the room. But you will say that here are some monsters or *brothers of the Lombards* (as the hysicians formerly called them because it was said that the vomen of Lombardy were subject to this kind of childbirth) vho approach more and more the human figure. Very well; o be it. How then (say you) can the proper limits of the igure which is to pass as human be determined? I reply hat in a conjectural matter there is no precision. And there he affair ends. You object that the innocent does not exhibit eason, and yet passes as a man, but if it had a monstrous igure, it would not be man, and thus you have more regard or figure than for reason. But, does this monster exhibit eason? Certainly not. You see, then, that it lacks more han the innocent. The defect of the exercise of reason is ften temporal, but it does not cease in those in whom it is ccompanied by a dog's head. For the rest, if this animal vith a human figure is not a man, there is no great harm in guarding it during the uncertainty as to its fate. And whether t has a rational soul or not, God will not have made it for nothing, and we may say of the souls of men who live in a tate always similar to that of early infancy that their fate nay be the same as that of the souls of those infants who die n the cradle.

CHAPTER V

OF TRUTH IN GENERAL

§ 1. *Ph.* For many centuries the question has been asked, What is truth? § 2. Our friends think it is the joining or eparating of signs according as the things themselves agree r disagree among themselves. By the joining or separating f signs must be understood what is otherwise called a *proposition*.

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ion. Lemnius relates this marvellous occurrence, which he states was reported o him by the woman herself, as soon as she had barely recovered, but in which here must have been some deception, in his *De miraculis occultis naturæ*, Bk. ., chap. 8, p. 37, Francofurti, 1628, Eng. trans., p. 24, London, 1658. — Tr.

Th. But an *epithet* does not make a proposition; for example, *the wise man.* But there is a union of two terms. Negation also is different from separation; for saying *man*, and after an interval saying *wise*, is not a denial. *Agreement* also, or *disagreement* is not properly speaking what is expressed by the proposition. Two eggs have agreement and two enemies have disagreement. The question here concerns an entirely particular mode of agreement or disagreement. Thus I think this definition fails wholly to explain the point in question. But what I find least to my taste in your definition of truth is that you seek truth in words. Thus the same sense expressed in Latin, German, English, French, will not be the same truth, and it will be necessary to say with Hobbes,[1] that

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[1] *Cf.* Leibnitz, *De stilo philos. Nizolii*, § 28, *ad fin.*, Gerhardt, 4, 158, Erdmann, 69 b, Dutens, 4, Pt. I., 60, where, after expressing his belief that "Occam himself was not more of a Nominalist than Thomas Hobbes now is, who, in truth, seems to me more than a Nominalist," Leibnitz continues: "Non contentus enim cum Nominalibus universalia ad nomina reducere, ipsam rerum veritatem ait in nominalibus consistere, ac, quod majus est, pendere ab arbitrio humano, quia veritas pendeat a definitionibus terminorum, definitiones autem terminorum ab arbitrio humano." Hobbes in his *Leviathan* (Morley's Universal Library, No. 21), 3d ed., London: Geo. Routledge & Sons, 1887, Pt. 1., chap. 4, p. 24, after speaking of "the imposing of 'names,' and the 'connection of them,'" says: "When two names are joined together into a consequence, or affirmation, as thus, 'a man is a living creature' . . . if the latter name 'living creature,' signify all that the former name 'man' signifieth, then the affirmation, or consequence, is 'true'; otherwise 'false.' For 'true' and 'false' are attributes of speech, and not of things. . . ." And in the next paragraph: "Seeing then that truth consisteth in the right ordering of names in our affirmations, a man that seeketh precise truth had need to remember what every name he uses stands for, and to place it accordingly." Leibnitz, probably, had this or some similar passage in mind, in his references to Hobbes' doctrine, and his statement is a possible and seemingly fair interpretation of many passages in Hobbes' writings, which passages, however, might be offset by others of a different character. Hobbes, nevertheless, seems never to have gone beyond his nominalistic position, never, at least, so far as consciously to connect his doctrine of truth with the facts of experience and the reality of things; while Leibnitz's doctrine of truth has to a certain extent at least an objective reference in affirming an actual or at least possible existence of the objects of ideas, *cf. ante*, pp. 422, note 1, 445, note 2, *infra*, p. 452, note 1.

For further exposition of Hobbes' doctrine, *cf.* G. Croom Robertson, *Hobbes* pp. 83–90, espec. p. 87 (Philos. Classics), Edinburgh: Wm. Blackwood & Sons 1886. On the relation of Leibnitz to Hobbes, *cf.* F. Tönnies, *Leibniz und Hobbes*, in the "Philos. Monatshefte," vol. 23, 1887, 557–573; see also, "Mind," No. 50, April, 1888, pp. 312–314. For two letters of Leibnitz to Hobbes, *cf* Gerhardt, *Leibniz. philos. Schrift.*, 1, 82–87, also, 7, 572–574, where the firs letter is given with an amended text. Leibnitz appended to his *Théodicée* short piece entitled *Reflexions sur l'ouvrage que M. Hobbes a publié en*

uth depends on the good pleasure of men; which is to speak
ι a very strange manner. You attribute, indeed, truth to God,
ho, you will agree with me (I think), has no need of signs.
inally, I have been astonished already more than once at the
isposition of your friends who are pleased to make essences,
ɔecies, and truths *nominal*.

Ph. Do not advance too fast. Under signs they include
leas. Thus, truths will be either *mental* or *nominal*, accord-
ıg to the species of signs.

Th. [We shall then have also *literal* truths, which may be
istinguished as truths upon paper or parchment, of ordinary
lack ink or of printer's ink, if truths must be distinguished
y signs. It were then better to place truths in the relation
etween the objects of ideas which causes the one to be or not
ɔ be included in the other. That does not depend upon
ınguages, and is common to us with God and the angels;
nd when God manifests a truth to us we shall acquire that
hich is in his understanding, for although there is an infi-
ite difference between his ideas and ours, as regards perfec-
ion and extent, it is always true that they agree in the same
elation. It is, then, in this relation that truth must be placed,
nd we can distinguish between the *truths* which are inde-
endent of our good pleasure, and between the *expressions*
vhich we invent as seems good to us.]

§ 3. *Ph.* It is only too true that men, even in their minds,
ut words in the place of things, especially when the ideas
re complex and indeterminate. But it is also true as you
ave observed, that then the mind contents itself with the
ndication only of the truth, without for the present under-
tanding it, in the persuasion that it depends upon itself to
ınderstand it when it will. For the rest, the act which takes
ılace in *affirming* or *denying* is more easily conceived by re-
lecting upon what goes on in us, than explained in words.
Therefore, you do not take it ill that in default of some-
hing better we have spoken of *joining together* or of *sepa-
rating*. § 8. You will also agree that propositions at least
nay be called verbal, and that, when they are true, they are

Anglois, de la liberté, de la necessité et du hasard, cf. Gerhardt, 6, 388–399,
Erdmann, 629–634, Janet, *Œuvres philos. de Leibniz*, 2, 424–437, Dutens, 1,
415–429 (in Latin).—Tr.

both verbal and also real, for, § 9. *falsehood* consists in joining names otherwise than as their ideas agree or disagree. § 10. Words are at least great *vehicles* of truth. § 11. There is also a *moral truth,* which consists in speaking of things according to the persuasion of our mind; there is finally *metaphysical* truth which is the real existence of things in conformity to the ideas we have of them.

Th. [Moral truth is by some called *veracity,* and *metaphysical truth* is commonly taken by the metaphysicians as an attribute of being, but it is an attribute very useless and almost void of meaning. Let us content ourselves with seeking truth in the correspondence of the propositions in the mind with the things in question. It is true that I have also attributed truth to ideas in saying that ideas are true or false; but then I mean, in reality, the truth of propositions affirming the possibility of the object of the idea. In the same sense we can say also that a *being is true,* that is to say, the proposition affirming its actual, or at least, possible existence.] [1]

CHAPTER VI

OF UNIVERSAL PROPOSITIONS, THEIR TRUTH AND CERTITUDE

§ 2. *Ph.* All our knowledge is of general or particular truths. We can never make the former, which are the most important, well understood, and can ourselves, indeed, very rarely comprehend them save as they are conceived and expressed by words.

Th. [I think that other marks also can produce this effect; we see it in the characters of the Chinese. A *universal char-*

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[1] *Cf. New Essays*, Bk. II., chap. 32, *ante*, p. 281, and notes; also Bk. III., chap. 3, *ante*, p. 317, note 3; and Bk. IV., chap. 1, *ante*, pp. 397–8. Locke in the first of these passages agrees with the view of Aristotle, *De Interpret.*, 1, 16^{a}, 12, that truth or falsity is predicable not of single ideas, but only of their union in judgments or propositions; and Leibnitz in the present passage maintains essentially the same doctrine in saying that by the truth he attributes to ideas he means the truth of the propositions affirming the possibility of the objects of the ideas. Such "true" or "false" ideas must, then, be regarded simply as abbreviated propositions, or as tacitly involving propositions. The idea of the decahedron (*cf. ante*, p. 315, and note 1) is false, although we have its nominal definition, because the figure is impossible.—TR.

eristic[1] very popular and better than theirs might be intro- ced if small figures were employed in the place of words, ich would represent visible things by their lines, and the visible by the visible which accompany them, adding thereto tain additional marks suitable to make understood the flex- ns and the particles. This would be of service at first for sy communication with distant nations; but if introduced o among us without, however, renouncing ordinary writing, employment of this mode of writing would be very useful enriching the imagination, and in giving thoughts less surd d verbal than we now have. It is true that the art of draw- not being known by all, it follows that, excepting the oks printed in this way (which everybody would soon learn read), everybody could not avail themselves of it otherwise an by a method of printing, *i.e.* having the figures all en- aved ready for printing upon paper, and adding thereto erwards with the pen the marks of the flexions or particles. it in time everybody would learn the plan in youth, so as t to be deprived of the convenience of this *figured character*, ich *would speak* in truth *to the eyes*, and would be very reeable to the people, just as in fact the peasants already ve certain almanacs, telling them without words much that ey ask; and I remember to have seen some satirical impres- ons in copper-plate which possessed a somewhat enigmatical aracter in which there were *figures significant of themselves*, ingled with words,[2] while our letters and the Chinese char- ters are significant only by the will of men (*ex instituto*).

§ 3. *Ph.* [I think your thoughts will some day be carried t, so agreeable and natural appears to me this *writing*, and seems to be of no little consequence for increasing the per- ction of our mind, and rendering our conceptions more real.] it to return to general knowledge and its certainty, it will proper to remark that there is a *certainty of truth* and also *certainty of knowledge*. When words are so joined in propo- tions that they express exactly the agreement or disagreement as it really is, it is a *certainty of truth;* and the *certainty of knowledge* consists in perceiving the agreement o disagreement of ideas so far as it is expressed in propositions This is what we ordinarily call being *certain* of a proposition.

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[1] *Cf. ante*, p. 375, note 1.

[2] Probably something similar to what is now known by the term "Rebus." r a brief statement of the development of writing from the picture stage, earliest form, to the alphabetic as we now have it, *cf.* E. Benj. Andrews, *stitutes of Gen. Hist.*, chap. 2, § 13, p. 49, 2d ed. Boston: Silver, Burdett & ., 1888. — Tr.

Th. [In fact this last kind of *certainty* will also suffice without the use of words, and is nothing else than a perfect knowledge of the truth; while the first kind of certainty appears t be nothing else than the truth itself.]

§ 4. *Ph.* Now as we cannot be assured of the truth of an *general proposition,* unless we know the precise limits of th signification of the terms of which it is composed, it will b necessary for us to know the essence of each species, which i not difficult as regards the *simple ideas* and the *modes.* But i substances wherein a real essence distinct from the nomina is supposed to determine the species, the extent of the general term is very uncertain, because we do not know this rea essence; and consequently *in this sense we cannot be assure* of any *general proposition* made upon the basis of these substances. But when we suppose the species of substances t be nothing else than the reduction of substantial individual into certain sorts, arranged under different general name according as they agree with the different abstract ideas whic we designate by these names, we cannot doubt whether a proposition, well known as it should be, is true or not.

Th. [I do not know why you, sir, return again to a poin sufficiently discussed by us, and which I believe an empty one But, after all, I am very glad of it, because you give me an opportunity very suitable (it seems to me) to disabuse you anew I say then to you that we can be assured, for example, of thousand truths regarding gold, or that body whose interna essence makes itself known by the greatest weight known her below, or by the greatest ductility, or by other marks. Fo we say that the body of the greatest known ductility is als the heaviest of all known bodies. It is true that it is no impossible that all which has hitherto been noticed in gol will some day be found in two bodies distinguishable by othe new qualities, and that thus gold would no longer be the lowest species, as it has hitherto been regarded provisionally We might also, if the one kind remained rare, and the othe became common, think it proper to reserve the name o gold to the single rare species, in order to retain it in as money by means of new assays which would be suited t. After which we shall not doubt, also, that the internal ence of these two species is different; and if indeed the nition of an actually existing substance should not be y determined in all respects (as in fact, that of men is not egards the external figure), we should not cease to have infinite number of general propositions upon its subject, ich would follow from reason and the other qualities which recognize in it. All that we can say regarding these gen- l propositions is, that in case man is taken as the lowest cies and restricted to the race of Adam, we shall have no perties of man such as are named *in quarto modo*,[1] or may

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The term *in quarto modo*, here used by Leibnitz, refers to a classification *ropria* — ἴδια, properties — existent in the time of Porphyry, 233–304, though accepted by him, — *cf.* Εἰσαγωγή, chap. 4, 4^a, 14 (in Aristotle, ed. Berl. d., Vol. 4, p. 4): τὸ δὲ ἴδιον διαιροῦσι τετραχῶς . . . (18.) τέταρτον δὲ ἐφ' οὗ συν- άμηκε τὸ μόνῳ καὶ παντὶ καὶ ἀεὶ, ὡς τῷ ἀνθρώπῳ τὸ γελαστικόν . . . (22.) ταῦτα δὲ καὶ ως ἴδιά φησιν, ὅτι καὶ ἀντιστρέφει — and due, perhaps, to some one of the old ipatetics, and prevalent in different forms in the Middle Age, according to ch classification as given by Porphyry there were four classes: 1. Propria onging to one species only, but not to every individual thereof, as *gram- tical* to man; 2. Propria belonging to every individual of the species, but to this species alone, as *biped* to man; 3. Propria belonging to one species y and to every individual thereof, but not always, as *hoary* to man; 4. Pro- ı belonging to one species only, to every individual thereof, always, as *bility* or *risible* to man.

The *propria* of this fourth class — *quartus modus* — are, each, of equal adth with its subject, and, though no part of the essence of the species of ich they are predicated, — man, for example, without the proprium *risible*, l being man, — as a matter of fact belong to every individual of the species all occasions, and to no individual of any other species. Propositions predi- ing such *propria* are judgments in A, according to Archbishop Thomson's minology, of the type "Common Salt is Chloride of Sodium," and are of ırse convertible.

Propria of this fourth class alone, *i.e. propria* each of which would be coinci- ıt with its subject so as to be enouncible in a judgment in A — reciprocal — con- ;ute the fourth predicable, and answer to the ἴδιον of Aristotle and Porphyry, l the *proprium* of Appuleius, Marcianus Capella and Boethius. These iters, with the exception of Aristotle, to whom probably the four-fold divis- . of *propria* was unknown, regard the other three classes, which were *pro- a* according to the Middle Age schoolmen, as *accidents*, — *accidentia*, συμβε- ·ότα, — a fact which explains the somewhat peculiar language of Leibnitz: Ve shall have no properties of man *such as* (*of the sort that*) are named *in arto modo*," etc. Leibnitz's thought is this: "In the case of 'man'" taken the lowest species — *species infima* — and "limited to Adam's race, there is, :ept provisionally, no such *proprium*. 'Sole-rational-animal' would be, ɔvisionally, such a *proprium*, because up till now we know no men whom it be enounced concerning him by a reciprocal or simply conve tible proposition, unless provisionally, as in saying: *man* *the only rational animal.* Taking man as those of our rac the *provisional* consists in the assumption that he is the onl rational animal of those known to us; for we might som day find other animals who would have in common with th posterity of men of the present time all that which we hav hitherto observed in them, but who would have another origi It is as if the so-called Australians should overrun our cou tries: in all likelihood we should then discover some means distinguishing them from ourselves. But in case this shoul not happen, and supposing that God had forbidden this mix ure of these races, and that Jesus Christ had redeemed ou only, it would be necessary to try to make some artificial mark in order to distinguish between them. There would doubtles be an internal difference, but as it would not make itself recog nizable, we should be reduced to the *extrinsic denomination* birth alone which we should try to accompany with a durabl artificial mark that would give an *intrinsic denomination*, an a constant means of distinguishing our race from the others These are all fictions, for we have no need to recur to thes distinctions, being the only rational animals of this globe Yet these fictions are useful in knowing the natures of ideas substances, and truths general in their character. But if ma were not taken as *the lowest species* nor as that of the rationa animals of the race of Adam, and if, instead of that, he signifie a genus common to several species, which belonged now to single known race, but which might belong also to other distinguishable either by birth or even by their natural marks as, for example, in the case of the supposed Australians then, I say, this genus would have *reciprocal propositions*, an the present definition of *man* would not be provisional. It i

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would not fit, and know of no other species any of whose individuals it woul fit. Only provisionally, however, for future discoveries may show, in eithe of these respects, that 'sole-rational-animal,' and 'man' are not exactly coinci dent concepts." On the whole subject, *cf.* Prantl, *Gesch. d. Logik*, Vol. 1 pp. 343, 395, 425, 581, 584, 630, 674, 676, 696, Vol. 2, pp. 342–343, Vol. 3 p. 102, Vol. 4, p. 241, note 383; Aldrich, *Artis Logicæ Rudimenta*, ed. Mansel Oxford, 1856, pp. 32–34.

I would add that for much of the material as well as of the language of th above note, I am indebted to the kindness of Pres. E. B. Andrews of Brow University. — Tr.

same with *gold;* for suppose that some day there were two ds of it distinguishable, the one rare and hitherto unknown, other common and perhaps artificial, discovered in the rse of time; then suppose that the name gold should tinue for the present species, *i.e.* for the natural and rare d, in order to preserve by its means the commodity of gold ney, based upon the rarity of this substance, its definition own hitherto by intrinsic denominations would have been visional only, and should be augmented by new marks ich will be discovered, to distinguish the rare gold or the ient species from the new artificial gold. But if the name d should then remain common to the two species, *i.e.* if gold you mean a genus of which up to the present time we ow no subdivision, and which we now take as the lowest ecies (but only provisionally until the subdivision is known) l if some day a new species were found, *i.e.* an artificial d, easy to make, and which might become common; I say t in this sense the definition of this genus should not be lged provisional, but perpetual. And indeed, without ubling ourselves with the names man or gold, whatever me is given to the genus or to the lowest known species, d even if none should be given them, what has just been d would be always true of ideas, genera or species, and ecies will be defined provisionally only by the definitions of nera. But it will always be allowable and reasonable to sume, by means of a reciprocal proposition, that there is a l internal essence belonging either to the genus or the ecies, which makes itself known ordinarily by external marks. ave assumed hitherto that the race does not degenerate or ange; but if the same race passed into another species, we ould be so much the more obliged to recur to other marks d denominations intrinsic or extrinsic, without confining rselves to the race.

§ 7. *Ph.* Complex ideas, which the names we give to the ecies of substances justify, are collections of ideas of certain alities which we have observed *coexisting* in an unknown *sub- atum* which we call substance. But we cannot know cer- inly what other qualities coexist necessarily with such com- nations, unless we can discover their dependence as regards eir primary qualities.

Th. I have already remarked before that the same (difficulty) is found in the ideas of *accidents*, whose nature is little abstruse, as, for example, are the figures in geometry for when the question concerns, for example, the figure of mirror which collects all the parallel rays into one point as focus, many properties of this mirror may be found before it construction is known, but we shall be uncertain about man other relations it may have, until we find in it that whic corresponds to the internal constitution of substances, *i.e.* th construction of this figure of the mirror, which will constitut as it were the key to ulterior knowledge.]

Ph. But if we had known the internal constitution of thi body, we should have found therein only the dependenc which the primary, or what you call manifest, qualities ma have, *i.e.* you would know what size, figure, and moving forc depend thereupon; but we should never know the connectio which they may have with the *secondary* or confused *qualities* *i.e.* with the sensible qualities, as colors, tastes, etc.

Th. The fact is, you still assume that these sensible qualities, or rather the ideas we have of them, do not depend upo figure and movement in a natural way, but only upon th good pleasure of God, who gives us these ideas. You appea to have forgotten, sir, the remonstrance I have more than onc made to you against this opinion, in order to make you thin rather that these *sensitive ideas* depend in detail upon the figures and movements, and express them exactly, although w cannot distinguish therein this detail in the confusion o too great a multitude and minuteness of mechanical action which strike our senses. But if we had reached the interna constitution of some bodies, we should see also how they mus have these qualities, which would themselves be reduced t their intelligible reasons; although it would never be in ou power to recognize them sensibly in these sensitive idea which are a confused resultant of the actions of bodies upo us, as, now that we have the perfect analysis of *green* into blu and yellow,[1] and have scarcely anything more to ask in regar to it save as related to these ingredients, we are, however incapable of analyzing the ideas of blue and yellow in ou

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[1] *Cf. ante*, p. 320, note 1; also Leibnitz's letter to Th. Burnett, without dat but written, according to Gerhardt, in 1699, G., *Leibniz. philos. Schrift.*, 256. — Tr.

sitive idea of green, for the very reason that it is a con-
sed idea. It is much the same as we cannot analyze the
a of the teeth of the wheel, *i.e.* of the cause, in the percep-
n of an *artificial transparency,* which I have noticed among
clock-makers, made by the rapid rotation of a cog-wheel,
ich makes the teeth disappear, and an imaginary continu-
s transparency appear in their place, composed of the suc-
ssive appearances of the teeth and their intervals, but in
ich the succession is so rapid that our phantasy cannot dis-
guish it. We find then, indeed, these teeth in the distinct
tion of this transparency, but not in this confused sensitive
rception, whose nature is to be and to remain confused;
erwise if the confusion ceased (as if the motion were so
w that we could observe its parts and their succession)
is notion, *i.e.* this phantasm[1] of a transparency would no
ger exist. And as there is no need of imagining that
d for his good pleasure gives us this phantasm, and that
is independent of the movement of the teeth of the wheel
d their intervals, and as, on the contrary, we conceive it
be only a confused expression of what takes place in this
ovement, an expression, I say, that consists in the fact that
ese successive things are confounded in an apparent simul-
neity: it is thus easy to think that it will be the same as
gards other *sensitive phantasms,* of which we have not as yet
perfect an analysis, as of colors, tastes, etc. For, to speak
e truth, they deserve this name phantasms rather than that
qualities or even of *ideas.* And it would suffice us in all
spects to understand them as well as this artificial trans-
rency, without its being reasonable or possible to claim
further knowledge of them; for to desire these confused
antasms to abide, and yet to distinguish therein their in-
edients by the phantasy itself, is a contradiction, is a desire
have the pleasure of being deceived by an agreeable per-
ective, and to desire that at the same time the eye see the de-
ption, which would destroy it. It is a case, in short, where —

nihilo plus agas
Quam si des operam, ut cum ratione insanias.[2]

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[1] *Cf. ante,* p. 445, note 1. Schaarschmidt here translates: "Phantasie-
rscheinung"; in line 17 of this page, "Phantasievorstellung"; in lines 24, 26,
, "Erscheinungen." — Tr.

[2] Terence, *Eun.*, 1. 1. 17, 18. — Tr.

But it often happens that men seek *nodum in scirpo*[1] and mak difficulties where there are none, by demanding the impossible and afterwards complaining of their impotence and of th limits of their light.

§ 8. *Ph.* *All gold is fixed* is a proposition, the truth of whic we cannot certainly know. For if *gold* signifies a species o things, distinguished by a real essence, which nature ha given it, we are ignorant what particular substances are o this species. Thus, although this may be gold, we cannot affirn it with certainty. If we take gold as a body endowed with a certain yellow color, malleable, fusible, heavier than any know body, it is not difficult to know what is or is not *gold;* bu with all that, *no other quality* can be affirmed or denied wit certainty of gold, than that which has a connection with thi idea, according to a connection or incompatibility which ma be discovered.[2] Now fixity having no known connection wit color, weight, and the other simple ideas which I have supposed to constitute the complex idea we have of gold, it i impossible that we can know with certainty the truth of thi proposition, that all gold is fixed.

Th. We know almost as certainly that the heaviest of al bodies known here below is fixed, as we know certainly tha it will be light to-morrow. This is because we have tried it a hundred thousand times; it is an experimental certainty, an of fact, although we do not know the bond which unites th fixity with the other qualities of this body. Moreover, it i unnecessary to oppose two things which agree and amount t the same thing. When I think of a body, which is at th same time yellow, fusible, and which resists the cupel, I thin of a body whose specific essence, although unknown in it interior, makes these qualities emanate from its depths, an makes itself known confusedly at least by means of them. I see nothing wrong in that, nor anything which requires you t return so often to the charge in order to attack it.

§ 10. *Ph.* It is enough for me now that this knowledge o the fixity of the heaviest of bodies is not known to us by th eement or disagreement of ideas. And I for myself think t among the secondary qualities of bodies and the powers ating to them there cannot any two be named whose neces- y coexistence or incompatibility can be known with cer- nty, except the qualities which belong to the same sense l necessarily exclude one another, as when you can say that at is white is not black.

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[1] *Cf. ante*, p. 226, note 1. — TR.

[2] According to the texts of Gerhardt and Erdmann. Jacques and Jane read: "Que ce qui a avec cette idée une connexion ou une incompatibilit qu'on peut découvrir"; *i.e.* than that which has a discoverable connectio or incompatibility with this idea. — TR.

Th. I believe, however, that you might perhaps find them; example, every palpable body (or that which may be felt touch) is visible. Every hard body makes a noise when uck in the air. The tones of strings or wires are semi-pro- tional to the weights which cause their tension. It is true t what you ask succeeds only as far as you conceive distinct as united with confused sensitive ideas.

§ 11. *Ph.* It is not always necessary to think that bodies re their qualities by themselves independently of anything e. A piece of gold, separated from the impression and luence of every other body, would immediately lose its low color and weight; perhaps, also, it would become able and lose its malleability. You know how vegetables l animals depend upon the earth, air, and sun; how do you ow whether the very distant fixed stars have not also an luence upon us?

Th. This is a very excellent remark; and if the contexture certain bodies were known to us, we could not judge wholly their effects without knowing the interior of those which ich and traverse them.

§ 13. *Ph.* Our judgment, however, may go further than r knowledge. For people sedulous in making observations ı penetrate farther, and by means of certain probabilities ulting from an exact observation and by certain hints pur- sely put together, often make just conjectures regarding at which experience has not yet discovered to them; but it always only conjecture.

Th. But if experience justifies these consequences in a con- ınt manner, do you not find that you can acquire certain opositions by this means? Certain, I say, at least as those ich assert, for example, that the heaviest of our bodies is ed and that the one which is after it the heaviest is volatile, r it seems to me that the *certainty* (understanding it as *moral*

or *physical*), but not the *necessity* (or *metaphysical* certainty)
these propositions which are learned by experience alone a
not by analysis and the bond of ideas, is established amo
us and with reason.[1]

CHAPTER VII

OF PROPOSITIONS CALLED MAXIMS OR AXIOMS

§ 1. *Ph.* There is one species of propositions which und
the name of *maxims* or *axioms* pass as *principles* of scien
and because they are *self-evident*, we have been contented
call them *innate*, although no one *that I know of* has ever tri
to show the reason and ground of their extreme clearne
which forces us, so to speak, to give them our consent. It
not, however, useless to enter into this investigation and
see whether this great evidence is peculiar to these propo
tions alone, as also to examine how far they contribute
our knowledge.

Th. This investigation is very useful and very importa
But you must not suppose, sir, that it has been entire
neglected. You will find in a hundred places that the Sch
lastics have said that these propositions are evident *ex t*
minis, as soon as the terms are understood, so that th
were persuaded that the force of conviction was grounded
the knowledge of the terms, *i.e.* in the connection of th
ideas. But geometers have done very much more: that

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[1] Metaphysical and moral or physical certainty differ as the certainty of
truths of reason and the truths of fact. The truths of reason ground th
selves in the necessities of thought, and their certainty is accordingly absol
The truths of fact, in Leibnitz's view, rest upon the divine choice of the b
and have an evidence merely relative and established with the aid of exp
ence; their necessity is accordingly only hypothetical. *Cf. New Essays*,
II., chap. 21, § 8, Th., *ante*, pp. 179–180, and § 13, Th., *ante*, p. 183. The p
ciple upon which the whole matter depends is the famous distinction of
mediæval scholastics between the understanding and the will of God, a p
ciple to which Leibnitz very often recurs, especially in order to maintain
contingency of the world, and to escape from the universal fatalism
Spinoza. According to this principle, the understanding of God is the so
of the necessary truths, and the will of God the source of the contingent tru
The distinction, however, does not solve the problem either of the conting
of the physical universe or of the moral freedom of man. — TR.

y have undertaken very often to demonstrate them.[1] Pro-
s already attributes to Thales of Miletus, one of the
est known geometers, the wish to demonstrate the proposi-
ns which Euclid has since assumed as evident.[2] It is said
t Apollonius has demonstrated other axioms, and Proclus
also done so. The late Mr. Roberval, already eighty
rs old or thereabouts, intended to publish the new ele-
nts of geometry of which I think I have already spoken to
.[3] Perhaps the "New Elements" of Arnauld, which at
t time made some stir, had contributed thereto.[4] He
ibited specimens of them in the Royal Academy of Sciences,
some found fault that assuming this axiom, *if equal mag-*

Leibnitz frequently refers, both in the *New Essays* and elsewhere, to
lemonstrability of the axioms, and the thought was evidently a favorite
with him. It is a weighty thought, too; for all real advance in specula-
and truly and lastingly constructive thinking rests upon just this "work-
over of the notions," as Herbart expresses it, this deeper penetration into
r real meaning and content, and its exposition in the simplest possible
lligible forms. — Tr.

Proclus cites Thales of Miletus in prop. XV., theor. VIII., of his *In*
um Euclidis Elementorum lib. Commentarii, ex recog. G. Friedlein,
9. Thales, c. 624–c. 550 B.C., was the founder of the Greek geometry, astron-
, and philosophy. For his geometry, *cf.* G. J. Allman, *Greek Geometry*
Thales to Euclid, Dublin, 1889; for his philosophy, *cf.* Zeller, *Philos. d.*
ch., I., 1 [Vol. 1], 180–196, 5th ed., Leipzig, 1892. — Tr.

Cf. ante, p. 107, note 1. — Tr.

The work of Antoine Arnauld, 1612–1694, here referred to is the *Nouveaux*
nens de Géométrie, Paris, 1661, mentioned among the most prominent
s of that time by Ch. Wolf in his *Kurzer Unterricht v. d. vornehmsten*
h. Schrift., Wien, 1763. Arnauld was an excellent mathematician, an able
osopher and theologian, a celebrated controversialist, and the indefatigable
npion and mouthpiece of the Jansenists against the Jesuits. A zealous
aolic, he repeatedly tried to convert Leibnitz to that faith. Leibnitz's
espondence with him contains important matter regarding his own philos-
y. It was originally edited and published by C. L. Grotefend, *Briefwechsel*
eibniz, Arnauld u. d. Landgrafen Ernst v. Hessen-Rheinfels aus d. Hand-
iften der Königl. Bibliothek z. Hannover, Hanover, 1846, and was re-
ted conformably to Grotefend's text by Janet, *Œuvres philos. de Leibniz*,
. 1, pp. 577–691, and, with a new comparison of the original Mss., by Ger-
lt, *Leibniz. philos. Schrift.*, Vol. 2, pp. 11–138; *cf.* also his Einleitung, *ib.*
sq., and Vol. 1, p. 65, and for Leibnitz's first letter, unanswered, to Ar-
ld, *ib.* 68–82 (Grotefend, *op. cit.* 137 *sq.*).

rnauld's *Œuvres complètes*, with a life by Larrière, appeared at Paris and
sanne, 1775–1783, 45 vols., Vols. 38–40 containing the philosophical works.
hese the most important are: *Des vraies et des fausses idées*, 1683, directed
inst Malebranche, in which Arnauld develops his doctrine of perception and
cks the theory of representative ideas, on which *cf.* Hamilton's Reid,
ed., Vol. 1, pp. 295–298, Vol. 2, pp. 823 b, 963; *Reflexions philos. et théolog.*
le nouveau systême de la nature et de la grace du P. Malebranche, 1685–

nitudes are added to equals, equals arise therefrom, he demo strated this other which is considered equally evident: *equals are taken from equal magnitudes, equals remain.* It w said he should have assumed both or demonstrated both. B I was not of that opinion, and I believed that it was alwa so much gained to have diminished the number of the axiom Addition is no doubt anterior to subtraction and more simp because the two terms are employed in addition in the sa way, which is not the case in subtraction. Arnauld d the opposite of Roberval. He assumed still more th Euclid. As for the *maxims,* they are sometimes taken established propositions whether evident or not. That m be well for beginners whom scrupulousness holds back; b when the establishment of science is the question, it is a d ferent matter. Thus it is that they are often taken in ethi and even among the logicians in their topics, in some of whi there is a good supply, but a part of which contain enough them vague and obscure. For the rest, I said a long ti since publicly and privately that it is important to demo strate all our secondary axioms, which we ordinarily u by reducing them to the *primitive* or immediate and indemo strable *axioms,* which I recently and elsewhere called t *identicals.*

§ 2. *Ph.* Knowledge is *self-evident* when the agreement disagreement of ideas is immediately perceived. § 3. B there are truths, not recognized as axioms, which are no the less self-evident. Let us see if the four species of agre ment of which we spoke not long since (chap. 1, § 3, a chap. 3, § 7), viz.: identity, connection, relation, and real e istence, furnish us with them. § 4. As for *identity or div sity,* we have as many evident propositions, as we have d tinct ideas, for we can deny both, as in saying *man is no horse, red is not blue.* Further the statement *what is, is,* is evident as the statement *a man is a man.*

Th. It is true, and I have already remarked that it is evident to say *ecthetically* in particular A is A, as to say

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1686; *Objections contre Descartes;* and *La Logique ou l'Art de Penser,* or celebrated Port Royal Logic, 1662, written in conjunction with Nicole *infra,* p. 530, note 1), the best specimen of the logic of the Cartesian sch It has been translated into English most admirably by Prof. Thos. Sper Baynes. — Tr.

ral: *it is what it is.* But to deny the subjects of different ; one of another is not always certain, as I have already rked; as if any one wished to say, *the trilateral* (or that h has three sides) *is not a triangle*, because, in fact, triality is not triangularity; again, if any one had said: *the ls of Slusius*[1] (of which I spoke to you not long since) *iot the lines of the cubic parabola*, he would have been mis-n, and yet that would have appeared evident to many le. The late Mr. Hardy,[2] Conseiller au Châtelet de Paris, xcellent geometer and orientalist and well versed in ancient geometers, who has published the commentary Iarinus on the Data of Euclid, was so prepossessed with fact that the oblique section of the cone called an ellipse fferent from the oblique section of the cylinder, that the onstration of Serenus[3] appeared to him paralogistic, and I l gain nothing against him by my remonstrances: as he nearly as old as Roberval, when I saw him, and I was a young man, a difference which could give me very little uasive power as regards him, although in other respects I on very good terms with him. This example may show ıssing what prepossession may do even in the case of clever le, for he was truly prepossessed, and Hardy is spoken of

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[1] *f. ante*, p. 387, note 1.—Tr.

[2] laude Hardy, born near the close of the sixteenth century, died in 1678, barrister by profession, and became in 1626 "Conseiller au Châtelet de ." He was acquainted with not less than thirty-six ancient and modern ages, and made a profound study of mathematics. Descartes chose him e of his judges in his controversy with Fermat, in 1698, over Fermat's *aximis et minimis*. Hardy published the *Data Euclidis*, Greek text, with trans., together with the commentary of Marinus, the Neo-Platonist eller, *Philos. d. Griech.*, III., 2 [Vol. 6], 833, 3d ed., 1881), who lived in ifth century, and was a disciple and the successor of Proclus (*cf. ante*, , note 2), at Paris, 1625, 4to. Leibnitz speaks of Hardy as an "homme érite, grand géomètre, et grand orientaliste," *cf.* Dutens, 5, 610.—Tr.

[3] erenus of Antissa, in the island of Lesbos, a Greek geometer, who lived e fourth century, was the author of two treatises, *De Sectione Cylindri ni, libri duo*, which, according to Brunet, appeared, together with the s of Apollonius of Perga, the *Lemmas* of Pappus of Alexandria, and the ıentaries of Eutocius of Ascalonita, at Bonn, 1566, fol., reprinted at Pis-1696, fol., and afterwards edited and published by Halley, Oxford, 1710, Hardy could not have seen either of the last two editions, since he died 78, but possibly he may have been acquainted with that of 1566; and, if then, as Schaarschmidt says, he must refer to Mersenne's Synopsis, , 1644, which contains, pp. 276–312, an abridgment of Apollonius and ıus.—Tr.

with esteem in the letters of Descartes.[1] But I brought h
forward only to show how we may be mistaken in denying o
idea of another, if we have not thoroughly enough examin
them where it is necessary.

§ 5. *Ph.* As regards *connection* or *coexistence,* we have ve
few self-evident propositions; there are, however, some, a
it appears to me that this is a self-evident proposition: *t*
bodies cannot be in the same place.

Th. Many Christians contest the point with you, as I ha
already remarked, and even Aristotle and those who after h
admit real and exact condensations, reducing one and the sa
entire body into a smaller place than it before filled, and tho
who, as the late Mr. Comenius[2] has done in a little book wr
ten expressly for the purpose, claim to overthrow[3] mode
natural philosophy by the experiment of the air-gun, cann
be expected to agree therewith. If you take the body as t
impenetrable mass, your statement will be true, because
will be identical or nearly so; but that the real body is su
will be denied you. At least it will be said that God cou

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[1] Schaarschmidt thinks that Leibnitz here confounded Hardy with Roberv
whom he had mentioned just before. Descartes frequently mentions Ha
in his letters, *cf.*, for example, Pt. I., epist. 111, Pt. II., epist. 61, 98, 101, 1
Pt. III., epist. 34, 60, 63, etc.; he also corresponded with him, and doubtl
valued him highly, as witness his choice of him as arbiter in his controve
with Fermat, but he nowhere in his letters appears expressly to praise hi
while he speaks thus of Roberval in Lib. III., epist. 56, ad Fermatium: "
procul dubio inter primarios seculi nostri geometras censeri debet." — Tr.

[2] John Amos Comenius, 1592–1671, the last bishop of the old Moravian
Bohemian Brethren, devoted himself chiefly to the reform and regulation
public education and instruction, and wrote many works on pedagogy, wh
he collected and published under the title *Opera didactica omnia,* Amsterd
1657, 4 vols., fol. He also did some work in physical science, publishing
Disquisitio de caloris et frigoris natura, Amsterdam, 1659, 12mo, which
writer in Michaud, *Biog. Univ.*, 9, 345, says is the only one of his phys
works deserving to be in demand, and his *Physicæ ad lumen divinum re*
matæ synopsis, Leipsig, 1633, and Amsterdam, 1643, Eng. trans., London, 1
which is, perhaps, the book to which Leibnitz here refers. For Leibnitz's e
mate of a portion of the writings of Comenius, *cf.* Dutens, 5, 181. For
account of his life and work, *cf.* S. S. Laurie, *Comenius. His Life and Edu*
tional Works, 4th ed. (Pitt Press Series), Cambridge, Univ. Press, 1893; als
reprint of the same, with five portraits, a somewhat extended and annota
bibliography, and photographic reproductions of pages from early edition
Comenius' works, published by C. W. Bardeen, Syracuse, N. Y., 1893. — Tr

[3] Gerhardt reads "reserver," probably a Ms. or typographical error; E
mann, Jacques, and Janet read "renverser," which, as the context requi
the translation follows. — Tr.

ke it otherwise, so that this impenetrability will be ad-
ted only as conformed to the natural order of things which
l has established and of which experiment assures us,
ough elsewhere it would be necessary to admit that it is
very conformable to reason.

6. *Ph.* As for the *relations* of the modes, mathematicians
e formed many axioms upon the one relation of equality,
that of which you have just spoken, that if equals be
en from equals the remainders are equal. But it is not less
lent, I think, that *one and one are equal to two*, and that if
n the five fingers of one hand you take away two and then
others from the five fingers of the other hand, the number
he fingers remaining will be equal.

Th. That one and one make two, is not properly a truth,
it is the definition of *two;* although it is true and evident
t it is the definition of a possible thing. As for the axiom
Euclid applied to the fingers of the hand, I willingly admit
t it is as easy to conceive what you say of the fingers as
ee it in the case of A and B; but in order not to do often
same thing, you observe it generally, and afterwards it is
icient to make subsumptions. Otherwise, it is as if you
ferred calculation by particular numbers to universal rules,
ich would be obtaining less than is possible. For it is of
re account to solve the general problem: to find two num-
s whose sum makes a given number, and whose difference
makes a given number, than merely to seek two numbers
ose sum makes ten, and whose difference makes six. For
I proceed in this second problem according to the method
numerical algebra, mixed with the literal (*specieuse*), the
ulation will be as follows: $a + b = 10$, and $a - b = 6$;
which by adding together the right side to the right, and
left side to the left, I produce the result, $a + b + a - b =$
$+ 6$, *i.e.* (since $+ b$ and $- b$ cancel each other) $2a = 16$
$a = 8$. Subtracting the right side from the right, and the
from the left (since to take away $a - b$ is to add $- a + b$)
roduce the result $a + b - a + b = 10 - 6$, *i.e.* $2b = 4$ or
$= 2$. Thus, I shall in truth have the a and b I ask for,
ich are 8 and 2, which satisfy the problem, *i.e.* whose sum
10 and whose difference is 6; but I have not thereby the
eral method for any other numbers, which we might wish

or be able to put in the place of 10 or 6, a method which could, however, find with the same facility as these two nu bers 8 and 2, by putting x and v in the place of the numbe 10 and 6. For proceeding the same as before we shall ha $a + b + a - b = x + v$, i.e. $2a = x + v$ or $a = \frac{1}{2}x + v$, and shall also have $a + b - a + b = x - v$, i.e. $2b = x - v$ or b $\frac{1}{2}x - v$. This calculation gives this theorem or general *cano* that when two numbers are required whose sum and diffe ence are given, you have only to take as the greater of tl required numbers, half of the sum made from the given su and difference; and for the less of the required numbers, ha of the difference between the given sum and difference. Yo see also that I might have dispensed with the letters, if had treated the numbers as letters, *i.e.* if instead of puttin $2a = 16$ and $2b = 4$, I had written $2a = 10 + 6$ and $2b = 10 -$ which would have given me $a = \frac{1}{2}(10 + 6)$ and $b = \frac{1}{2}(10 - 6$ Thus, in the particular calculation itself I should have had tl general calculation, taking these symbols 10 and 6 as gener numbers, as if they were the letters x and v; in order to ha a truth or method more general, and taking these same chara ters 10 and 6 also for the numbers they ordinarily signify, shall have a sensible example which may serve, indeed, as proof. And as Vieta[1] has substituted letters for numbers f the sake of greater generality, I have desired to reintrodu the numerical characters, since they are more serviceab in algebra (*specieuse*) even than the letters. I have found th of much use in large calculations for avoiding errors and ev

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[1] François Viète, 1540–1603, better known by the Latin form of his nan Vieta, was a distinguished French mathematician, who is often regarded the founder of modern algebra, because of his introduction of the general of letters as symbols of undetermined, and therefore general, quantities, tl opening up the way for the higher mathematical analysis, afterwards carr on by Descartes and others. To him is also due the invention of the differ simple transformations now used in the solution of equations, such as addi to or subtracting from the members of an equation the same quantity, or m tiplying or dividing them by the same quantity. He first enounced the *prin ple of homogeneity* or the principle that all the quantities in an equation sho be of one kind, — lines, surfaces, solids, or supersolids, — a principle which, af three centuries of controversy, has now been adopted generally by mathem cians. His various mathematical writings, which, being a man of wealth, printed at his own expense and distributed among the scholars of Euro were collected and edited by F. van Schooten, Professor of Mathematics Leyden, aided by J. Golius and Mersenne, and published under the title *Opera mathematica*, Leyden, 1646, 1 vol., fol. — Tr.

the application of proofs, such as the casting away of the
nes in the midst of the computation without waiting for the
sult, when there are only numbers instead of letters; which
ay often be when you employ skill in the positions, so that
e suppositions are found true in the particular case, besides
e use there is of seeing the connections and orders which
e letters alone cannot always make the mind discern so well,
I have elsewhere shown, after I found that the good *char-*
teristic is one of the greatest aids of the human mind.

§ 7. *Ph.* As for *real existence* which I had counted as the
urth species of existence which may be noticed in ideas, it
n furnish us no axiom, for we have not indeed a demonstra-
ve knowledge of beings outside us, God alone excepted.

Th. We can always say that this proposition *I exist*, is
the highest evidence, being a proposition which cannot be
oved by any other, or rather an *immediate truth.* And to
y *I think, therefore I am*, is not properly to prove existence
thought, since to think and to be thinking is the same thing;
d to say, I am thinking, is already to say, *I am.* You can,
wever, exclude this proposition from the number of the axi-
ns with some reason, for it is a proposition of fact, based
pon an immediate experience, and it is not a necessary prop-
sition, whose necessity is seen in the immediate agreement of
leas. On the contrary, it is only God who sees how these
vo terms, *I* and *existence* are united, *i.e.* why I exist. But if
e axiom is taken more generally as an immediate or *non-*
rovable truth, we may say that this proposition, *I am*, is an
xiom, and in every case we may be assured that it is a *primi-*
ve truth, or rather *unum ex primis cognitis inter terminos com-*
lexos, i.e. that it is one of the first known statements which
understood in the natural order of our knowledge, for it
ay be that a man has never thought expressly of forming
his proposition, which, however, is innate to him.

§ 8. *Ph.* [I have always believed that the axioms have little
nfluence upon the other parts of our knowledge. But you
ave disabused me, since you have indeed shown an important
se of identical propositions. Suffer me, however, sir, to set
efore you still what I have in mind upon this article, for
our explanations may also serve to make others return from
heir error.] § 8. It is a celebrated rule in the schools that

all reasoning comes from things already known and admitted, *ex praecognitis et praeconcessis.* This rule seems to cause these maxims to be regarded as truths known to the mind before the others, and the other parts of our knowledge as truths dependent upon the axioms. § 9. [I think I have shown (Book I., chap. 1) that these axioms are not the first known, the child knowing much sooner that the rod which I show him is not the sugar he has tasted, than all the axioms you please. But you have distinguished between particular knowledge or experiences of facts and the principles of a universal and necessary knowledge (and herein I admit that it is necessary to recur to axioms) as also between the natural and accidental order].

Th. I have also added that in the natural order the statement, that a thing is what it is, is prior to the statement that it is not another; for the question here does not concern the history of our discoveries, which is different in different men, but the connection and natural order of truths, which is always the same.[1] But your remark, viz.: that what the child sees is only a fact, deserves still more reflection; for the experiences of the senses do not give truths absolutely certain (as you have often yourself, sir, observed not long since), nor are they exempt from all danger of illusion. For if it is allowable to make fictions metaphysically possible, sugar might imperceptibly be changed into a rod, in order to punish the child who has been naughty, as water is changed into wine with us on Christmas eve, if it has been well prepared (*morigené*).[2] But in all cases the pain (you will say) that the rod inflicts will never be the pleasure the sugar gives. I reply that the child will take it into his head as late to make an express proposition about this, as to notice this axiom, that you canot truly say that what is is not at the same time, although e can very well perceive the difference of the pleasure and e pain, as well as the difference between perceiving and not erceiving.

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[1] Leibnitz here calls attention to a very important distinction, viz.: the distinction between the historical and the natural or logical order of our knowledge. The genesis of our knowledge, its gradual rise in the course of our lives is always a matter of individual experience, the experience of no two individuals being precisely alike; while the natural or logical order and connection of truths, being grounded in reason, is always the same for all. Leibnitz' remark further suggests that the origin of a principle or truth is not it justification, a common fallacy in much of the investigation of the presen day, and that the ultimate criteria of truth are philosophical, not historical *Cf.* Bowne, *Metaphysics*, pp. 13 *sq.*, New York: Harper and Bros., 1882. — Tr

[2] Duncan, *Philos. Wks. of Leibnitz*, p. 354, translates: "rectified." — Tr.

§ 10. *Ph.* There are, however, a number of other truths as lf-evident as these maxims. For example, *that one and two re equal to three,* is as evident a proposition as that axiom hich states: *that the whole is equal to the sum of all its parts.*

Th. You appear to have forgotten, sir, that I have shown ou more than once that the statement *one and two is three* is ly the definition of the term *three,* so that to say that one d two is *equal to three,* is to say that a thing is equal to self. As for this axiom, that *the whole is equal to the sum of l its parts,* Euclid makes no express use of it. This axiom so needs limitation, for it must be added that these parts ust not themselves have a common part, for seven and eight e parts of twelve, but they make more than twelve. The st and the trunk taken together are more than the man, in at the thorax is common to them both. But Euclid says, at *the whole is greater than its part,* a statement which is holly trustworthy. And the statement that the body is eater than the trunk, differs from the axiom of Euclid only this, that this axiom is limited to what is exactly necessary: ut in exemplifying it and clothing the body you make the telligible become also sensible, for the statement that a *given* hole is larger than a *given* part, is in fact the proposition at a whole is larger than its part, but the features of which re embellished with some coloring or addition: it is as if he ho says A B says A. Thus it is not necessary here to oppose e axiom and the example as different truths in this regard, ut to consider the axiom as embodied in the example and ndering it true. It is a different matter, if the evidence is ot observed in the example itself, and when the affirmation f the example is a consequence, and not merely a *subsump- on* of the universal proposition, as may occur indeed in the ase of the axioms.

Ph. Our clever author says here: I should like to ask these entlemen who maintain that all other knowledge (not of fact) epends upon general principles innate and self-evident, what rinciple they need to prove that *two and two are four?* for we know (according to him) the truth of this kind of propositions without recourse to any proof. What do you say about it, sir?

Th. I say that I was awaiting you there well prepared. That two and two are four is not a truth at once immediate, supposing that *four* signifies three and one. We can then demonstrate it, and in this way:—

Definitions.— (1) *Two* is one and one.
(2) *Three* is two and one.
(3) *Four* is three and one.

Axiom.—Putting equal things in their place, the equality remains.

Demonstration.—2 and 2 is 2 and 1 and 1 (by def. 1)....... $2 + 2$

2 and 1 and 1 is 3 and 1 (by def. 2)..... $\underbrace{2 + 1}\!\!\!\!\!\!\overbrace{ + 1}$

3 and 1 is 4 (by def. 3).................. $\underbrace{3 + 1}_{4}$

Then (by the axiom) 2 and 2 is 4. Which was to be demonstrated.

I might, instead of saying that 2 and 2 is 2 and 1 and 1, say that 2 and 2 is equal to 2 and 1 and 1, and thus with the others. But it may be understood throughout in order to shorten the process; and that, in virtue of another axiom which states that a thing is equal to itself, or that what is the same, is equal.

Ph. [This demonstration, as little necessary as it is in relation to its too well known conclusion, serves to show how truths depend on definitions and axioms. Thus I foresee what reply you will make to many objections that are made against the use of axioms. You object that there will be an innumerable multitude of principles; but this is when you reckon among the principles the corollaries which follow from the definitions by the aid of some axiom. And since the definitions or ideas are innumerable, so also will the principles be in this sense, supposing also with you that the undemonstrable principles are the identical axioms. They become innumerable also by exemplification, but at bottom you can reckon A is A and B is B as one and the same principle differently clothed.

Th. Further, this difference of degrees in the evidence makes me disagree with your distinguished author that all ıese truths called *principles* and which pass as self-evident, ecause they are so near the indemonstrable primitive axıms, are entirely independent and incapable of receiving the ıe from the other any light or proof. For they may always e reduced either to axioms, themselves, or to other truths earer the axioms, as this truth, that two and two make four, as shown you. And I just told you how Roberval diminished ıe number of Euclid's axioms, by sometimes reducing one to nother.

§ 11. *Ph.* This judicious writer, who has furnished an occaion for our conferences, agrees that maxims have their use, ut he believes that it is rather that of closing the mouth of ıe obstinate, than of establishing the sciences. I should be ery glad, said he, if you would show me some one of these iences built upon these general axioms which cannot be hown to be sustained as well without axioms.

Th. Geometry is, without doubt, one of these sciences. uclid expressly employs axioms in demonstration, and this xiom: *that two homogeneous magnitudes are equal when one is either larger nor smaller than the other*, is the basis of the emonstrations of Euclid and Archimedes respecting the size f curvilinears. Archimedes employed axioms of which Euclid ad no need; for example, of two lines, each of which is conave always on the same side, that which encloses the other is he greater. We cannot also dispense with the *identical* axoms in geometry, as, for example, the principle of contradicion, or the demonstrations which lead to the impossible. nd as for the other axioms, which are demonstrable, we may ispense with them, absolutely speaking, and draw concluions immediately from the identicals and from the definiions; but the prolixity of the demonstrations, and the endess repetitions into which you would then fall, would cause horrible confusion, if it were always necessary to begin *ab vo;* while by assuming the mean propositions, already roved, we easily pass much farther. This assumption of ruths already known is useful, especially as regards the axoms, for they recur so often that geometers are compelled to nake use of them constantly without citing them; so that we hould be mistaken in thinking that they are not there, because ve do not perhaps always see them quoted in the margin.

Ph. But he objects to the example from theology. For the knowledge of this holy religion came to us from revelation (says our author), and without this aid the maxims would never have been able to make us know it. The light comes to us then from the things themselves, or immediately from the infallible *veracity* of God.

Th. It is as if I said, medicine is based upon experience, reason then is of no use therein. Christian theology, which is the true medicine for souls, is based upon revelation which corresponds to experience; but to make of it a perfect body, we must unite therewith natural theology, which is drawn from the axioms of eternal reason. Is not this principle indeed that *veracity is an attribute of God,* upon which you acknowledge that the certainty of revelation is based, a maxim taken from natural theology?[1]

Ph. Our author wishes to distinguish between the means of acquiring knowledge and of teaching it, or rather between teaching and communicating. After schools had been erected and professors established to teach the sciences that others had found out, these professors availed themselves of these maxims in order to impress the sciences upon the minds of their scholars, and to convince them by means of the axioms of certain particular truths; while the particular truths have served the first discoverers in finding the truth without the general maxims.

Th. I wish that this pretended procedure had been justified for us by examples of some particular truths. But rightly considering things, we shall not find it practised in the establishment of the sciences. And if the discoverer finds only a particular truth, he is only half a discoverer. If Pythagoras d only observed that the triangle whose sides are 3, 4, 5, has e property of the equality of the square on the hypothenuse ith those on the sides (*i.e.* that $9 + 16 = 25$), would he on at account have been the discoverer of this great truth which cludes all right-angled triangles, and which has passed into maxim with the geometers? It is true that often an exam-e, seen by chance, serves as the occasion which suggests to a ever man the search for general truth, but it is still very ten no easy matter to find it; besides, this path of discovery not the best nor the most employed by those who proceed in orderly and methodical way, and they make use of it only on the occasions when better methods fall short. In the me way, some have thought that Archimedes found the adrature of the parabola by weighing a piece of wood cut rabolically, and that this particular experiment caused him discover the general truth; but those who know the pene-ation of this great man see clearly that he had no need of ch an aid. Moreover, if this empirical way of particular uths had been the occasion of all the discoveries, it would ot have been sufficient to give them; and the discoverers emselves have been delighted with observing the maxims d the general truths if they have been able to attain them, therwise their discoveries would have been very imperfect. ll that may then be attributed to the schools and to the pro-ssors, is that they have collected and arranged the maxims nd other general truths: and would God they had done so ill more and with more care and choice, the sciences would ot be found so scattered and so confused. For the rest I dmit, that there is often some difference between the method e use in teaching the sciences and that which has produced eir discovery: but this is not the point in question. Some-imes, as I have already observed, chance has given occasion r discovery. If we had noticed these occasions, and had reserved the memory of them for posterity (which would ave been very useful), this detail would have been a very con-iderable part of the history of the arts, but it would not have

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[1] Locke, without discussing its possibility or its method, assumes a specia source of religion in an immediate revelation of God to the soul of man, and rests the truth of this revelation upon the "unerring veracity" of God. *Cf. Philos. Wks.*, Vol. 2, p. 209, Bohn's ed. Leibnitz, who elsewhere discusses t a certain extent both the possibility and the method of revelation, and admit its possibility, and also its actuality, especially as regards those things which are beyond the limits of our finite experience, emphasizes the rational elemen in theology by calling attention to the fact that revelation presupposes a natural idea of God, philosophically derived and including the attribute of veracity, to which it may appeal and by which its character and claims to authorit must be judged. — TR.

[2] *Cf. ante*, p. 379, note 1. On his life and philosophy, *cf.* Zeller, *Philos. d Griech.*, 5th ed., Vol. 1, pp. 296 *sq.* For his mathematical work, *cf.* G. J

llman, *Greek Geometry from Thales to Euclid*, Dublin, 1889, and, by the me author, *Pythagorean Geometry*, being the mathematical part of the rticle "Pythagoras" in the *Encyclop. Brit.*, 9th ed., Vol. 20, pp. 146–149 Amer. ed.). — Tr.

been proper to make systems of them. Sometimes also discoverers have proceeded rationally to the truth, but by extended circuits. I find that in matters of importance authors would have rendered service to the public, if they had been willing sincerely to indicate in their writings the traces of their experiments; but if the system of science should be built upon that foundation, it would be as if in a finished house you wished to preserve all the apparatus which[1] the architect required in building it. Good methods of teaching are all such that by their means science could certainly have been discovered; and then if they are not empirical, *i.e.* if the truths are taught by reasons or by proofs drawn from ideas, it will always be by axioms, theorems, canons, and such other general propositions. The case is different when the truths are *aphorisms* like those of Hippocrates,[2] *i.e.* truths of fact either general, or

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[1] Gerhardt reads "donc," manifestly a manuscript or a typographical error. Erdmann, Jacques, and Janet read "dont," which the translation follows. — Tr.

[2] Hippocrates of Cos, 460–375 B.C., the "Father of Medicine," was the firs to base the practice of medicine on the observation of nature and the principle of an inductive philosophy. Though descended from a family of priest-physicians, he put aside all its traditions and prejudices, gave himself up to th study of the natural history of disease in the living subject, and treated i always as subject to natural laws. He placed especial emphasis on symptomology and dietetics. The two chief modern critical editions of his writings, o those ascribed to him, are E. Littré, *Œuvres complètes d'Hippocrate*, 10 vols. Paris, 1839–61, and F. Z. Ermerins, *Hippocratis et aliorum medicorum veteru reliquiæ*, 3 vols., Utrecht, 1859–64. The Ἀφορισμοί — Aphorisms — are accepte as absolutely genuine by Littré, but rejected as spurious by Ermerins. Th Greek text with French trans. is found in Littré, *op. cit.*, Vol. 4, pp. 396 *sq.* with Latin trans., in Ermerins, *op. cit.*, Vol. 1, pp. 397 *sq.* For an Englis translation, *cf.* F. Adams, *Genuine Wks. of Hippocrates* (Sydenham Soc.), vols., London, 1849, Vol. 2, p. 685.

In this connection I may add that Professor Schaarschmidt of Bonn University has kindly informed me that the phrase σύμπνοια πάντα cited by Leibnit from Hippocrates, *cf. ante*, p. 48 (*ad fin.*) is to be found in the Περὶ τροφῆς, § 2 Littré, *Œuvres d'Hippocrate*, Vol. 9, p. 106, where it runs thus: Ξύρροια μί ξύμπνοια μία, ξυμπαθέα πάντα· κ.τ.λ. Professor Schaarschmidt thinks that Leibnitz probably read: ξύμπνοια πάντα, — *conspirantia omnia*, — omitting μία an ξυμπαθέα, and took ξύμπνοια for an adjective, while it is in the text a substantive meaning concordance, — *conspiratio*, — a usage which sometimes occur *cf.* Stephanus, *Thesau. Ling. Græc.*, Vol. 3, p. 416, C; or that he quote from memory, as he often does. Σύμπνους — *conspirans* — as an epithet of th universe occurs in Plutarch, *De fato*, 2, 574, E: τὸ φύσει διοικεῖσθαι τόνδε τ κόσμον, σύμπνουν, καὶ συμπαθῆ, αὐτὸν αὑτῷ ὄντα, *i.e.* "that the world is governe by Nature, and that it conspires, consents, and is compatible with itself. *Plutarch's Morals*, Eng. trans., by several hands, corrected and revised b W. W. Goodwin, Ph.D., Vol. 5, p. 308, Boston: Little, Brown & Co., 1870. — T

east true most frequently, learned by observation or based
experience, and for which there are no reasons immedi-
ly convincing. But the question here is not about this,
these truths are not known by the connection of ideas.

h. Here is the manner in which our ingenious author con-
res that the need of maxims has been introduced. The
ools having established *disputation* as the touchstone of the
lity of people, they adjudged the victory to the one who
ds the field of battle and speaks the last word. But in
er to furnish means of convincing the obstinate, it was
essary to establish maxims.

Th. The schools of philosophy had done better, no doubt,
unite practice with theory, as do the schools of medicine,
mistry, and mathematics; and to give the prize to the one
o had done the best, especially in ethics, rather than to the
who had spoken the best. Yet as there are matters in
ich discourse itself is an effect and sometimes the sole
ect and masterpiece which can make known the ability of
man, as in metaphysical matters, we have had reason on
ne occasions to judge of the ability of people by their suc-
s in the conferences. We know, indeed, that at the begin-
g of the *Reformation* the Protestants challenged their
ersaries to come to colloquies and discussions, and some-
es upon the success of these discussions the public con-
ded for the reform. We know, also, how much the art of
aking and of giving birth and force to reasons, and, if it
y be so called, the art of discussion, can accomplish in a
ncil of state and of war, a court of justice, a medical con-
tation, and even in a conversation. And we are obliged to
ur to this means and to content ourselves with words
tead of acts on those occasions, for this very reason that
question then concerns an event or future fact where it
ld be too late to learn the truth by the effect. Thus the
of discussion or of contending by reasons (whereby I here
lerstand the quotation of.authorities and examples) is very
at and very important; but unfortunately it is very badly
naged, and for this reason also often reaches no conclusion
a bad one. It is for this reason that I have more than
e intended to remark upon the colloquies of theologians,
ounts of whom we have, in order to show the defects which

may be noticed in them and the remedies that might be em ployed therefor. In consultations upon business, if those wh have the most power have not a very solid mind, authority o eloquence prevail ordinarily, although they are banded again the truth. In a word, the art of conferring and discussin would need to be entirely remodelled. As for the advantag of the one who has the last word, it is almost wholly in fre conversations; for in councils suffrages or votes go by orde whether they begin or finish with the last in rank. It is tru that it ordinarily belongs to the president to begin and en *i.e.* to propose and decide; but he decides according to th plurality of the votes. In academic discussions it is th *respondent* or maintainant (of the thesis) who speaks last, an the field of battle abides with him, almost always by a established custom. It is a question of testing him, not confounding him; otherwise it would be treating him as a enemy. In reality, there is almost no question of truth these occasions: indeed, opposite theses are maintained different times in the same chair. The hall of the Sorbon was shown to Casaubon,[1] and they said to him: this is th place where they have disputed for so many centuries; replied, to what conclusion have they come?

Ph. The wish was, however, to prevent the dispute fro going on to infinity, and to furnish means of deciding betwe two equally expert combatants, in order that the dispu enter not upon an *infinite series* of syllogisms. This mea was the introduction of certain general propositions, t larger part self-evident, and which being of such a nature to be received by all men with entire consent, were to regarded as general measures of truth, and to hold the place *principles* (when the disputants had posited no others), beyo which none could go, and to which both sides were obliged hold. Thus these maxims having received the name of pr ciples which could be denied in the dispute, and which endl the question, they were taken *erroneously* (according to m author) as the sources of knowledge and the foundations f the sciences.

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[1] Isaac Casaubon, 1559–1614, a great classical scholar and editor, who h the reputation of being, next to Scaliger, the most learned man of his a Leibnitz also relates this anecdote in his letter to Thomas Burnett, Feb. 1 1697, Gerhardt, 3, 192, Dutens, 6, 245. — Tr.

Th. Would to God we had made use of them in this way
the discussions, there would be nothing to say in reply, for
should decide something. And what better thing could
do than to reduce controversy, *i.e.* contested truths to
ths evident and incontestable? would not that be to estab-
h them in a demonstrative fashion? And who can doubt
it these principles, which would end disputes by establish-
truth, would not be at the same time sources of knowledge?
r, provided the reasoning is good, it matters not whether
is carried on silently in one's study, or exposed for sale
olicly in a professor's chair. And even if these principles
re assumptions rather than axioms, taking the assumptions
as Euclid, but as Aristotle, *i.e.* as suppositions which
st be admitted while waiting opportunity to prove them,
se principles would always have this use, that by means
them all the other questions would be reduced to a small
nber of propositions. Thus I am the most surprised of
body to see a praiseworthy thing blamed by I know not
at prepossession, to which we clearly see by the example
your author the most clever men are susceptible through
nt of attention. Unfortunately they do an entirely differ-
thing in academic disputes. Instead of establishing gen-
l axioms, they do all they can to weaken them by vain and
le understood distinctions, and it pleases them to employ
tain philosophical rules, of which there are large books
npletely full, but which are little certain and little deter-
ned and which they have the pleasure of eluding while dis-
guishing them. This is not the way to end the disputes,
; to render them infinite, and finally to wear out the
ersary. It is as if we put him in a dark place, where we
ike at random and no one can judge the blows. This
ention is admirable for the maintainants (*Respondentes*)
o are engaged in maintaining certain theses. It is a buck-
of Vulcan which renders them invulnerable; it is *Orci*
ea, Pluto's helmet, which renders them invisible. They
st be very unskilful or very unfortunate if they can be
ght with that. It is true there are some *rules* which have
eptions, especially in questions into which many circum-
nces enter, as in jurisprudence. But to render their use
e these exceptions must be determined in number and

sense so far as possible; and then it may be that the exception itself has its *sub-exceptions, i.e.* its *replications,* and tha the replication has its *duplications,* etc., but at the end of th reckoning, all these exceptions and sub-exceptions, clearly determined, and joined with the rule, must achieve universality Of this jurisprudence furnishes very remarkable examples But if these kinds of rules, loaded with exceptions and sub exceptions, should enter into academic disputes, it woul always be necessary to dispute pen in hand, holding as *protocol* what is said by both sides. And this would be mor necessary elsewhere, in disputing constantly *pro forma* b means of many syllogisms, mixed from time to time with distinctions, which the best memory in the world must confound But we are not kept from giving ourselves this trouble, fro pushing sufficiently the *formal syllogisms* and from registerin them, in order to discover the truth when it is without recom pense, and we should not indeed succeed therein, if we wished unless the distinctions are excluded or better regulated.

Ph. It is, however, true, as our author observes, that th scholastic method having been introduced also into conversa tions outside the schools, in order to shut the mouths o cavillers, has produced a bad effect. For, provided we hav mediate ideas, we may have the connection without the aid o the maxims and before they have been produced, and tha would be sufficient for sincere and tractable people. But th method of the schools having authorized and encouraged me in opposing and resisting evident truths until they are reduce to contradict themselves or to fight established principles, is no wonder that in ordinary conversation they are n ashamed to do what in the schools is a subject of glory an counted a virtue. The author adds that reasonable peopl among the rest of the world, who are not yet corrupted b education, will find it very difficult to believe that such method has ever been followed by persons who make a pro fession of loving truth, and who pass their lives in studyin religion or nature. I shall not inquire here (says he) ho this method of instructing is fitted to turn away the minds o young people from the love of and sincere search for th truth, or rather to make them doubt if there really is an truth in the world, or at least any which deserves the

herence. But what I strongly think (he adds) is this, that
cepting those places which have admitted the Peripatetic
ilosophy into their schools, where it has reigned many cen-
ies without teaching the world anything but the art of dis-
tation, these maxims are nowhere regarded as the foundations
the sciences nor as important aids to advancement in the
owledge of things.

Th. Your clever author will have it that the schools alone
ve been led to form maxims; but it is the general and very
ional instinct of the human race. You can infer this from
proverbs which are in use among all nations, and which
usually only maxims which the public acknowledge. But
ien persons of judgment make a statement which appears to
contrary to the truth, we must do them the justice to sus-
ct that there is a greater defect in their expressions than
their sentiments: a procedure confirmed here in our author,
whose motive animating him against the maxims, I begin
catch a glimpse. Cavilling, as well as the desire to be con-
iced in order to yield, exists as really in ordinary discourse,
iere there is no question of exercise, as in the schools; else-
iere most frequently they have the better grace to suppress
e majors which are understood, and to be contented with
thymemes, and indeed without forming premises it is suffi-
ent often to use the simple *medius terminus* or mediate idea,
e mind understanding sufficiently its connection without ex-
essing it.[1] And this is satisfactory when this bond is incon-
stable; but you, sir, will also agree with me that often we
too fast in assumption, and that paralogisms arise so that
would very often be better to have regard for certainty,
expressing ourselves, than to prefer thereto brevity and
egance. But the prejudice of your author against maxims

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[1] Ordinarily in argumentation we omit one of the premises, usually the
jor, as easily understood and too clearly manifest to require statement.
metimes, but less commonly, we omit the minor premise, and occasionally
conclusion, as in epigrams and other forms of wit, the whole point of
ich very often consists in making apparent the unexpressed truth. Leib-
z emphasizes the sufficiency of the middle term — *medius terminus* — or
diate idea, because through it, the common term in the premises expressing
particular reason in the given case, the conclusion is reached, whence the
ddle term is sometimes called *the argument*. The mind having grasped the
rticular reason expressed in this term, can easily supply the rest of the argu-
ent, and, if necessary, state it in due syllogistic form. — Tr.

made him reject altogether their utility for the establishment of the truth, and goes as far as to make them accomplices with disorders in conversation. It is true that young people accustomed to academic exercises in which they are occupied a little too much with exercise and not enough in drawing from the exercise the greatest fruit it should have, viz.: knowledge, have some difficulty in emancipating themselves therefrom in the world. And one of their cavillings is not to wish to yield themselves to the truth save when it has been rendered entirely palpable to them, though *sincerity* and indeed *civility* should compel them not to wait for these extremes, which make them disagreeable and give a bad opinion of them. It must also be admitted that it is a vice with which men of letters are often found infected. But the fault is not in wishing to reduce truths to maxims, but in wishing to do it unseasonably and needlessly, for the human mind sees much at a glance, and it is to restrain it that we wish to compel it to stop at every step it takes and to express all that it thinks. It is precisely as if when making his account with a merchant or host one should compel him to reckon the whole with the fingers in order to be more certain of it. And to make that demand he must be either stupid or capricious. In fact, sometimes we find that Petronius had reason for saying *adolescentes in scholis stultissimos fieri,*[1] that young people sometimes become stupid and even harebrained in places, which ought to be schools of wisdom; *corruptio optimi pessima.*[2] But still oftener they become vain, blundering, and confused, whimsical, troublesome, and that often depends on the disposition of their masters. For the rest, I find that there are far greater faults in conversation than that of demanding too much clearness. For usually we fall into the opposite vice and neither give nor ask for enough of it. If the one is troublesome, the other is hurtful and dangerous.

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[1] Petronius, *Satyricon*, chap. 1: "Et ideo ego adolescentulos existimo in scholis stultissimos fieri, quia nihil ex iis, quæ in usu habemus, aut audiunt, aut vident," etc. — Tr.

[2] The phrase is not found in any classical author. It was perhaps suggested by Aristotle, *Politics*, Δ, 2, 1289^a, 39: ἀνάγκη γὰρ τὴν μὲν τῆς πρώτης καὶ θειοτάτης [πολιτείας] παρέκβασιν εἶναι χειρίστην, thus translated by Jowett, *The Politics of Aristotle*, Vol. 1, p. 109, Oxford: Clarendon Press, 1885: "That which is the perversion of the first and most divine [government] is necessarily the worst." — Tr.

12. *Ph.* The use of maxims is sometimes also, when
ched to false notions, vague and uncertain; for then the
ims serve to confirm us in our errors, and even to prove
radictions. For example, he who with Descartes[1] forms
dea of what he calls *body*, as of a thing which is nothing
extension, may demonstrate easily by this maxim *what is*,
hat there is no vacuum, *i.e.* space without body. For he
ws his own idea, he knows that it is what it is and not
her idea; thus extension, body, and space being with him
e words signifying one and the same thing, it is also as
for him to say, that space is body, as to say that body is
y. § 13. But another for whom body signifies a solid
nsion, will conclude in the same way that to say: that
e is not a body is as certain as any proposition we can
ve by this maxim: *it is impossible for a thing to be and not*
e at the same time.

h. The bad use of maxims should not cause their general
to be censured; all truths are liable to this disadvantage,
, by uniting them with falsehoods, false or even contradic-
conclusions may be drawn. And in this example there
ut little need of these identical axioms to which is im-
ed the cause of the error and contradiction. This would
een if the argument of those who concluded from their
nitions, that space is body, or that space is not body,
e reduced to form. There is, indeed, something exces-
in this inference: body is extended and solid, then exten-
, *i.e.* the extended is not body, and extension is not a
oreal thing; for I have already remarked that there are
erfluous expressions of ideas, or those which do not mul-
y things, as if some one said, by *triquetrum* I mean a
ateral triangle, and concluded therefrom that every trilat-
is not a triangle. Thus a Cartesian might say that the
of a solid extension is of this same nature, *i.e.* that it is
erfluous; as in reality, taking extension as something sub-
tial, every extension will be solid, or rather every exten-
will be corporeal. As for the *vacuum*, a Cartesian will be
t in concluding from his idea or *form of idea* that there is
e, supposing his idea to be valid; but another will not be

Cf. Princip. Philos., II., §§ 1, 4, 11, Veitch's trans., pp. 232, 237, 8th ed.,
burgh, 1881.—Tr.

right in concluding at once from his form that there may be a vacuum, as in reality, although I am not for the Cartesian view, I nevertheless think there is no vacuum,[1] and I find that in this example a worse use is made of *ideas* than of *maxims*.

§ 15. *Ph.* It seems at least that from such use as you would make of maxims in verbal propositions they cannot give us the least knowledge of substances existing outside us.

Th. I am altogether of another opinion. For example, this maxim that nature proceeds by the shortest paths, or at least by the most definite, suffices alone to give a reason for nearly the whole of optics, catoptric and dioptric, *i.e.* of what takes place outside us in the action of light, as I have formerly shown[2] and Molyneux has strongly approved in his Dioptric, which is a very excellent book.[3]

Ph. It is maintained, however, that when use is made of identical principles to prove propositions in which there are words signifying complex ideas as *man* or *virtue*, their use is extremely dangerous, and invites men to regard or receive falsehood as manifest truth. And this is because men think that when the same terms are retained the propositions revolve about the same things, although the ideas which these terms signify are different; so that men taking the words for the things, as they usually do, these maxims commonly serve to prove contradictory propositions.

Th. How unjust to blame the poor maxims for that which should be imputed to the bad use of terms and to their equivocations. By the same reasoning you will blame the syllogisms because they conclude badly when the terms are equivocal. But the syllogism is innocent, because in reality there are then four terms contrary to the rules of the syllogism. By the same reasoning you would also blame the calculations of arithmeticians, or of algebraists, because by putting *X* for V or by taking *a* for *b* by inadvertence, they draw therefrom false and contradictory conclusions.

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[1] *Cf. ante*, p. 16, and *New Essays*, Bk. II., chap. 4, *ante*, pp. 125–127; also Descartes, *Princip. Philos.*, II., §§ 16 *sq.*, Veitch's trans., pp. 241 *sq.* — Tr.

[2] Leibnitz probably refers to his article *Unicum opticæ catoptricæ et dioptricæ principium*, published in the "Acta Erud. Lips.," June, 1682, pp. 185-190, and found in Dutens, 3, 145–150. — Tr.

[3] *Cf. ante*, p. 138, note 1. Molyneux's *Dioptrica nova* was for a long time the chief work on Optics. — Tr.

§ 19. *Ph.* I should think at least that maxims are of little se when we have clear and distinct ideas; and others will ave it indeed that then they are absolutely of no use, and aintain that any one who in these instances cannot discern uth and falsehood without these kinds of maxims, will not e able to do so by their agency; and our author (§§ 16, 17) ows indeed that they are of no use in deciding whether such one is a man or not.

Th. If the truths are very simple and evident, and closely pproaching the identicals and the definitions, there is but ttle need of expressly employing maxims to draw from em these truths, for the mind virtually employs them and akes its conclusion all at once without intermediate ideas. ut without axioms and theorems already known, mathema-icians would have much trouble in advancing; for in long rocesses of reasoning (*consequences*), it is well to stop from ime to time, and to set up, as it were, military columns in he midst of the road, which will serve furthermore to indi-ate it to others. Otherwise these long roads will be too nconvenient, and will appear even confused and obscure, hile we are unable to discern anything, or to point out what lace we are in. It is like going to sea without a compass in dark night, seeing neither bottom, shore, nor stars; it is like ravelling in vast moors in which there are neither trees nor ills nor streams; it is like a linked chain destined for the easurement of lengths, in which there are some hundreds of inks, perfectly alike, without a distinction of a bead, or of oarser grains or of larger links or other divisions which ight indicate the feet, fathoms, perches, etc. The mind hich loves unity in multiplicity then joins together some of he consequences to form from them mediate conclusions, and his is the use of maxims and theorems. By this means there s more pleasure, more light, more memory, more application nd less repetition. If some analyst in calculating should hoose not to assume these two geometrical maxims, that the quare on the hypothenuse is equal to the two squares of the ides about the right angle, and that the corresponding sides f similar triangles are proportional, thinking that, because ve have the demonstration of these two theorems by the con-ection of the ideas they contain, he can pass them by easily by putting the ideas themselves in their place, he will find himself far removed from his reckoning. But that you may not think, sir, that the proper use of these maxims is confined to the limits of the mathematical sciences alone, you will find that its use is not less in jurisprudence, and one of the principal means of rendering it easier, and of looking at its vast ocean as upon a geographical map, is to reduce a multitude of particular decisions to more general principles. For example, you will find that a multitude of laws, of Digests, of actions or exceptions, of those which are called *in factum*,[1] depend on this maxim, *ne quis alterius damno fiat locupletior*,[2] let no one profit by the injury which might happen to another, a principle which should, however, be expressed with a little more precision. It is true that there is a great distinction to be made between the rules of law. I speak of good ones, and not of certain brocards (*brocardica*)[3] introduced by the doctors which are vague and obscure; although these rules also might often become good and useful, if reformed, while with their infinite distinctions (*cum suis fallentiis*) they serve only to confuse. Now good rules are either aphorisms or maxims, and under maxims I include both axioms and theorems. If these are *aphorisms* which are formed by induction and observation, and not by reason *a priori* and which clever people have made after a review of established law, this text of the jurisconsult Paulus in the title of the Digests, which speaks of the rules of law, has place: *non ex regula jus sumi*

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[1] *Cf. Digest.*, Lib. XLIV., Tit. VII., 25, Ulpianus, lib. singul. Regularum "§ 1.—*In factum* actio dicitur, qualis est (exempli gratia) actio quæ datur patrono adversus libertum, a quo contra edictum prætoris in jus vocatus est."—TR.

[2] For a similar expression, *cf. Digest.*, Lib. L., Tit. XVII., 206, Pomponius lib. 9, ex variis Lectionibus: "Jure naturæ æquum est, neminem cum alterius detrimento et injuria fieri locupletiorem"; *Digest.*, Lib. XII., Tit. VI., 14 also Lib. XXIII., Tit. III., 6, Pomponius, lib. 14 ad Sabinum, § 2: ". . . quia bono et æquo non conveniat, aut lucrari aliquem cum damno alterius, aut damnum sentire per alterius lucrum"; Lib. XIV., Tit. III., 17, § 4, ad fin.—TR

[3] *Cf.* Letter 11, to Kestner, Jan. 30, 1711, § 2 (Dutens, 4, Pt. III., 264, also Kortholt, *Leibnit. epist. ad diversos*, Lips. 1734–1742, 3, 251): "Brocardica quæ vocant, vel sunt ipsa solida juris principia, vel regulæ, quædam topicæ. priora necessaria sunt: posteriores utiles forent, si satis examinatæ, explicatæque haberentur: pertinent enim fere ad facti quæstionem, artemque conjiciendi, ad quam refero etiam interpretandi artificium." *Cf.* also Leibnitz's *Nova methodus discendæ docendæque jurisprudentiæ*, Pt. II., § 25, Dutens, 4, Pt. III., 188–189.—TR.

ex jure quod est regulam fieri,[1] *i.e.* we draw rules from a r already known, in order the better to remember them, but do not establish the law upon these rules. But there are *ndamental maxims* constituting the law itself and forming ions, exceptions, replications, etc., which, when they are ght by pure reason, and do not arise from the arbitrary wer of the state, constitute natural law; and such is the e of which I have just spoken, which forbids tortious ofit. There are also rules whose exceptions are rare, and ich consequently pass as universal. Such is the rule of the stitutes of the Emperor Justinian in § 2 of the title Actions, ich declares that when the question concerns corporeal ngs, the actor does not possess, except in a single case ich the emperor states is indicated in the Digests; but leaves us to search for it. It is true that some read stead of *sane uno casu, sane non uno*;[2] and from one case u can sometimes make many. Among the physicians the e Mr. Barner,[3] who, in giving us his *Prodromus*, made us pe for a new Sennertus,[4] or system of medicine accommodated to the new discoveries or views, advances the opinion that the method which physicians ordinarily observe in their systems of practice is to explain the art of healing by treating of one disease after another following the order of the parts of the body human or other, without having given universal precepts of practice common to many diseases and symptoms, and that this involves them in an infinite number of repetitions; so that we might suppress, in his view, three-quarters of Sennertus, and abridge the science infinitely by universal propositions, and especially by those with which agrees the καθόλου πρῶτον of Aristotle,[1] *i.e.* which are reciprocal, or approach thereto. I think there is reason in advising this method, especially as regards the precepts wherein *medicine is ratiocinative;* but in proportion as it is *empirical,* it is not so easy nor so certain to form universal propositions. Further, there are usually complications in particular diseases, which form, as it were, an imitation of substances, so that a disease is like a plant or an animal, which demands a history by itself, *i.e.* they are *modes* or forms of being with which agrees what we have said of bodies or substantial things, a quartan[2] fever being as difficult to examine thoroughly as gold or quicksilver. Thus it is well, without detriment to the universal precepts, to seek in the

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[1] *Cf. Digest.*, Lib. L., Tit. XVII., 1. Paulus [lib. 16 ad Plautium]: "Regula , quæ rem, quæ est, breviter enarrat. Non ut ex regula jus sumatur, sed jure, quod est, regula fiat." Gerhardt's text omits the name Paulus, and footnote states that there is a gap in the Ms.—Tr.

[2] *Cf.* Sandars, *Inst. of Justinian*, Lib. IV., Tit. VI., *De actionibus*, § 2, *ad* . (p. 431, 8th ed., London, 1888): "Quod genus actionis in controversiis um corporalium proditum non est, nam in his is agit qui non possidet: ei o qui possidet, non est actio prodita per quam neget rem actoris esse. Sane o casu, qui possidet, nihilominus actoris partes obtinet, sicut in latioribus gestorum libris opportunius apparebit." The reading "sane uno casu" is opted and followed by the modern editors. The references to the Digests , according to Sandars, Lib. VIII., 5, 2, Lib. XXXIX., 1, 15, ed. Mommsen, rlin: Weidmann, 1870, pp. 267, 378.—Tr.

[3] Jacob Barner, 1641–1686, a German physician, was professor of chemistry Padua, and of philosophy and medicine at Leipzig, and the author or com- er of a large number of works which give a sufficiently faithful account of medicine and especially the chemistry of his time, wholly occupied as it s in the chimerical search for the philosopher's stone. His *Prodromus Sen- rti novi*, Augustæ Vindelicorum, 1674, 4to, was published as the prospectus a proposed, but never completed, work, which, like that of Sennert, should ver the history of medicine from the earliest times to his own day.—Tr.

[4] Daniel Sennert, 1572–1637, a celebrated German physician, was professor medicine in the University of Wittemberg from 1602–1637, and introduced o its curriculum the teaching of chemistry, in spite of strong and continued position from those who thought it useless. He disputed the doctrine of the ul held by the Schoolmen, and by maintaining the immateriality of the souls animals raised against himself many adversaries, among whom was Honora-

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tus Fabri, who accused him of blasphemy and impiety, because he had no seen the bearing of his reasonings. Sennert protested that he had never maintained the immortality of the souls of animals, but it was a strict consequence of his principle.

In his *Institutiones medicæ et de origine animarum in brutis,* Wittemberg, 1611, 4to, Sennert endeavored to unite for the first time the principles of Galen (*cf. ante*, p. 407, note 1) with those of Paracelsus, 1493–1541. His *Opera omnia* ed. novissima, Lugduni, 1676, 6 vols., fol. Sprengel says he was "the mos celebrated of all the conciliators of the seventeenth century," "a man wh united to immense erudition and to a perfect knowledge of the ancients grea credulity, a taste little refined, and a weak judgment." — Tr.

[1] Aristotle limited scientific consideration to that which is universally o for the most part valid. His καθόλου πρῶτον is the universal in its original an proper sense, as the essential attribute of individual things in which alone i has any realization, and whose essence consists in just this realization of th universal in them. This universal is conceived of as the cause, and as suc becomes the middle term in the syllogism, and constitutes the absolutely essential element in logical demonstration, in the absence of which the reasonin has no validity. *Cf.* Wallace, *Outlines of the Philos. of Aristotle,* 3d ed., §§ 2 32–34, pp. 47, 64; Zeller, *Philos. d. Griech.* II. 2 [Vol. 4], 304 *sq.*, 3d ed.; Prant *Gesch. d. Logik,* 1, 104 *sq.*, 119 *sq.*; Windelband, *A Hist. of Philos.*, trans. b J. H. Tufts, Ph.D., 133–143. New York: Macmillan & Co., 1893. — Tr.

[2] *I.e.* a fever running in periods of four days. — Tr.

fferent kinds of diseases methods of healing, and remedies hich satisfy many symptoms and complications of causes, d especially to gather together those which experience has proved. This Sennertus has not sufficiently done, for comtent judges have remarked that the compositions of the ceipts he proposes are often made more *ex ingenio* by timate than authorized by experience, as would be necesry if one would be more certain of his case. I think then at the better course would be to unite these two ways, and t to complain of repetitions in a matter so delicate and so portant as is medicine, wherein I find that we lack what e have in too large measure in my view in jurisprudence, *i.e.* oks of particular cases, and repertories of observations ready made. For I think that a thousandth part of the oks of the jurisconsults would suffice us, but that we would ave none too many in the matter of medicine, if we had thounds more of well-detailed observations. The fact is, jurisrudence is wholly based upon reasons in regard to which othing is expressly indicated by laws or by customs. For we n always derive it either from law or, in default of this, om natural right by means of the reason. The laws of ch country are finished and determined, or may become so; hile in medicine, the principles of experience, *i.e.* the obervations, cannot be too greatly multiplied in order to give ore opportunity to the reason to decipher what nature only alf allows us to know. For the rest, I do not know any one ho employs the axioms in the way that the clever author of hom you speak does (§§ 16, 17), as if any one, in order to emonstrate to a child that a negro is a man, availed himself f the principle what is, is, by saying: a negro has a rational oul; now the rational soul and man is the same thing, and onsequently if having a rational soul he were not a man, it vould be false that what is, is, or rather one and the same hing would be or would not be at the same time. For without employing these maxims, which are not in season here, nd do not enter directly into the reasoning, as they also do ot advance it in any respect, everybody will be content to eason thus: a negro has a rational soul, whoever has a ational soul is a man, therefore the negro is a man. And if ny one assuming that there is no rational soul if it does not appear to us, concluded that infants just born and imbecile do not belong to the human species (as, in fact, the autho states that he has conversed with very reasonable persons wh made this denial), I do not think that the bad use of th maxim, that it is impossible for a thing to be and not to be would delude them, nor that they think of it even in drawin this conclusion. The source of their error would be an extension of the principle of our author, which denies that there i anything in the soul of which it is not conscious, while thes gentlemen would proceed as far as to deny the soul itself when others did not perceive it.

CHAPTER VIII

OF TRIFLING PROPOSITIONS

Ph. I believe, indeed, that reasonable persons have n been disinclined to employ *identical* axioms in the way o which we have just spoken. § 2. It also seems that thes purely identical maxims are only *trifling propositions* or *nugatoriæ*, as the schools indeed call them. I should not be conten to say that they seem thus, did not your surprising exampl of *the demonstration of conversion* by the agency of the ident cals[1] make me proceed, bridle in hand, thenceforth, whe contempt for anything is the question. But I shall tell yo that what you allege in their favor proclaims them wholl trifling; viz.: (§ 3) you recognize at first sight that they contain no instruction unless to show a man sometimes the absurdity in which he is involved.

Th. Do you count that as nothing, sir, and do you not recognize that to reduce a proposition to absurdity is to demonstrat its contradictory? I indeed believe that you will instruct n man by telling him that he must not deny and affirm the sam thing at the same time, but you instruct him by showing hi by the force of the consequence, that he does this withou thinking of it. It is difficult, in my opinion, always to pas

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[1] *Cf. New Essays*, Bk. IV., chap. 2, *ante*, p. 409.—Tr.

·om these *apagogical demonstrations, i.e.* demonstrations which ·duce to absurdity, and to prove everything by *the ostensives,*[1] ; they are called; and geometers, who are very curious on ıis point, have tried it sufficiently. Proclus speaks of it ·om time to time, when he sees that certain ancient geome·rs, coming after Euclid, have found a demonstration more irect (as they think) than his. But the silence of this anient commentator sufficiently shows that they did not always ccomplish it.

§ 3. *Ph.* You will at least admit, sir, that a million proposiions may be formed at little expense, but also of very little se; for is it not trifling to remark, for example, that the yster is the oyster, and that it is false to deny it, or to say ıat the oyster is not the oyster? As to which our author greeably says that a man who would make this oyster someimes the subject, sometimes the attribute, or the *predicatum,* ·ould justly be like a monkey who should amuse himself by ırowing one oyster from one hand to the other, which proeeding could altogether as well satisfy the hunger of the ıonkey as these propositions are capable of satisfying the nderstanding of man.

Th. I find that this author, as full of intelligence as gifted ·ith judgment, has every reason in the world for speaking gainst those who would so use them. But you certainly see ow the identicals must be employed to render them useful; iz.: by showing by force of consequences and definitions that ther truths which you wish to establish reduce to them.

§ 4. *Ph.* I know it and I see clearly that they may be pplied with much stronger reason to propositions which ppear trifling and on many occasions are so, wherein a part f the complex idea is affirmed of the object of this idea, as n the statement: *lead is a metal.* In the mind of a man who s acquainted with the meaning of these terms and who knows hat lead signifies a very heavy fusible and malleable body, here is this use alone, that in saying metal, you indicate to im at once many simple ideas instead of enumerating them ne by one. § 5. The same is true when part of the definition is affirmed of the thing defined; as in the statement *all gold is fusible,* supposing you have defined gold as a yellow heavy, fusible, and malleable body. Again, to say that th triangle has three sides, that man is an animal, that a palfre (*palefroy,* an old French word) is an animal which neighs serves to define the words, but not to teach anything beside the definition. But we learn something from the statemen that man has a notion of God and that opium plunges hi into sleep.

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[1] *I.e.* direct demonstrations, a term used as the opposite of the indirect or *pagogical* demonstrations, which show the truth of a thing by proving the bsurdity of denying it. — Tr.

Th. Besides what I have said of the identicals which ar wholly so, we shall find that these semi-identicals have also particular use. For example, *a wise man is always a man* that gives us the knowledge that he is not infallible, that h is mortal, etc. Some one in danger needs a pistol-ball, an lacks the lead to found it in the form he has; a friend say to him: remember that the *silver* you have in your purse i *fusible;* this friend will not teach him a quality of the silver but will make him think of a use he may make of it, in orde to have pistol-balls in this pressing need. A large part o *moral truths* and of the most beautiful *sentences* of authors i of this nature: they very often teach us nothing, but the make us think at the right time of what we know. Tha iambic senarius of the Latin tragedy,—

Cuivis potest accidere, quod cuiquam potest,[1]

which might be expressed thus, although less prettily: tha which may happen to one, may happen to everybody, onl makes us remember the human condition, *quod nihil humani nobis alienum putare debemus.*[2] This rule of the jurisconsults *qui jure suo utitur, nemini facit injuriam*[3] (he who uses hi

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[1] Publilius Syrus, in Seneca, *De Tranquillitate,* chap. 11.—Tr.

[2] *Cf.* Terence, *Heauton.* 1. 1. 23–25: "Homo sum; humani nihil a me alie num puto."—Tr.

[3] Schaarschmidt states that this rule of the jurisconsults comes from th "*Regulæ et præcepta juris,*" which were customarily appended to the olde editions of the *Institutiones.* The exact phrase does not occur in the *Corpu Juris Civilis;* but *cf.* Digest, Lib. XXXIX., Tit. II., 24, *ad fin.,* where Trebatiu says: "non teneri me damni infecti: neque enim existimari, operis mei viti damnum tibi dari in ea re, in qua jure meo usus sum"; *ib.* 26: "Proculus ai cum quis jure quid in suo faceret," etc.; Digest, Lib. L., Tit. XVII., 55, whe Gaius says: "Nullus videtur dolo facere, qui suo jure utitur"; *ib.* 129, whe Paulus says: "Nihil dolo creditor facit, qui suum recipit."—Tr.

'n right, injures no one) appears trifling. But it is very eful on certain occasions and makes one justly think of ıat is necessary. If, for instance, any one raised his house far as he is allowed by the statutes and usages, and by so ıing deprived his neighbor of some view, he would pay this ·ighbor at once, according to this rule of law, if he ventured complain. For the rest, propositions of fact, or experiences, ке that which states that opium is a narcotic, carry us farther an the truths of pure reason, which can never make us go ·yond that which is in our distinct ideas.[1] As for this proposition, that every man has a notion of God, it is from the ason, since notion signifies idea. For the idea of God, acrding to my view, is innate in all men: but if this notion gnifies an idea in which you actually think it, it is a proposition of fact which depends on the history of the human race. 7. Finally, to say that a triangle has three sides is not so entical as it seems, for a little attention is required to see ıat a polygon must have as many angles as sides; it would so have an additional side, if the polygon were not supposed · be closed.

§ 9. *Ph.* It seems that the general propositions concerning ıbstances are for the most part trifling, if they are certain. e who knows the meanings of the words: substance, man, ıimal, form, soul, vegetative, sensitive, rational, will form om them many indubitable but useless propositions, partic- arly about the soul, of which we often speak without knowıg what it really is. Every one may see an infinite number propositions, reasonings, and conclusions of this nature in ıe books of metaphysics, scholastic theology, and a certain ind of physics, the reading of which will teach him nothing ore of God, spirits, and bodies than he knew before having ın through these books.

Th. It is true, that abstracts of metaphysics and such other ɔoks of this character as are commonly seen, teach only ords. To say, for example, that metaphysics is the *science* being in general, which explains the principles and affecons emanating from it; that the principles of being are

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[1] Truths of fact furnish occasion for inductive conclusions which enlarge ır knowledge; while truths of reason can only be explicated, or made clearer to their already existing content. — Tr.

essence and existence; that the affections are either prim
tive, viz.: unity, truth, the good, or derivative, viz.: ide
tity, diversity, simplicity, complexity, etc., and, in speakin
of each of these terms, to give only vague notions and verb
distinctions is indeed to abuse the name of *science*. But w
must render this justice to the more profound Scholastic
like Suarez[1] (whom Grotius valued so highly) and admit th
there is sometimes in them discussions of value, as upon t
continuum, the infinite, the contingent, the reality of abstract
the principles of individuation, the *origo et vacuum formarun*
the soul and its faculties, the concurrence of God with h
creatures, etc., and even in ethics, upon the nature of t
will and the principles of justice; in a word, we must adm
that there is still some gold in these scoriæ, but it is on
enlightened persons who can profit from it; and to load t
youth with the rubbish of inutilities, because there is som
thing of value here and there, would be badly to dispose
the most precious of all things, time. For the rest, we a
not wholly destitute of general propositions regarding su
stances which are certain, and deserve to be known; there a
grand and beautiful truths concerning God and the soul whi

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[1] Francisco Suarez, 1548–1617, a famous Jesuit and a distinguished philos
pher, theologian, and philosophical jurist, was "the last great Scholastic
In philosophy he was a moderate Thomist. As a theologian, he advocated t
system known as "congruism." In his *Tractatus de legibus ac Deo legislato*
reprinted, London, 1679, wherein he was to a certain extent the forerunner
Grotius and Pufendorf, he maintained the theory of conditional obedience
authority. For an account of his views on natural law and sovereignty,
Larousse, *Grande Dict. Univ. de XIX^e Siècle*, Vol. 14, pp. 1164 c–1165 a;
his "congruism," *ibid.*, Vol. 4, p. 934 a. His *Opera omnia*, 23 vols., fol.,
peared at Mainz and Lyons, 1630 *sq.*, Venice, 1640, new revised ed., 26 vol
8vo, Besançon and Paris, 1856–62. The most important of his works are, p
haps, the *Disputationes metaphysicæ*, 1605, and the *Tract. de leg.*, cited abo
For an account of his philosophy, *cf.* Stöckl, *Gesch. de Philos. d. Mittelalte*
III. [Vol. 4], 634 *sq.*, and K. Werner, *Suarez u. d. Scholastik d. letzten Ja*
hunderte, Regensburg, 1861.

Huig van Groot — Latin, Hugo Grotius — *cf. ante*, p. 285, note 1, one of t
founders of the philosophy of law, in his theological writings occasionally ci
Suarez as an authority; *cf.*, for example, *Opera omnia theologica*, Amsterda
1679, Vol. 4, pp. 206, a, 50, 621, a, 54; and in his *Epistolæ ad Gallos*, epist.
ad Joa. Cordesium, p. 335, ed. Leipzig, 1674, and new ed. 1684, also *Epist*
quotquot reperiri potuerunt, epist. 329, p. 118, Amsterdam, 1687, praises h
thus: "Quorsum tantus Suarezii contemtus? hominis, si quid recte judi
in philosophia cui hoc tempore connexa est scholastica, tantæ subtilitatis,
vix quemquam habeat parem?" — Tr.

clever author has taught either in his own right or in after others. We have perhaps added something also eto. And as for general knowledge concerning bodies, iderable additions are being made to what Aristotle left, it should be said that physics, even general physics, has me much more real than it was heretofore. As for real aphysics, we are beginning, as it were, to establish it, and ind important truths grounded in reason and confirmed by erience, which belong to substances in general. I hope, , that I have advanced a little the general knowledge of soul and of spirits. Such a metaphysic was the demand ristotle, it is the science which he called Ζητουμένη, the red (*la desirée*) or that which he sought, which must be as rds the other theoretic sciences what the science of happi- is to the arts which it needs, and what the architect is to workmen. This is why Aristotle said that the other nces depend upon metaphysics as the most general science must derive from it their principles, demonstrated by it.[1] must know also that true ethics is to metaphysics what tice is to theory, because upon the doctrine of substances ommon depends the knowledge of spirits and particularly od and the soul which gives a proper meaning to justice virtue. For as I have elsewhere[2] remarked, if there were her providence nor a future life, the wise man would be e limited in the practice of virtue, for he would refer ything merely to his present satisfaction, and even this sfaction, which appears already in Socrates, in the em- or Marcus Aurelius, in Epictetus and other ancients,[3]

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f. Aristotle, *Metaphys.*, A, 2, 982 a–983 a, the object of which is to prove ependence of the other sciences upon metaphysics, and in which the term frequently occurs in this specific sense; *cf.* especially 982 b, 7, 8: *ἐξ ἁπάν- ὖν τῶν εἰρημένων ἐπὶ τὴν αὐτὴν ἐπιστήμην πίπτει τὸ ζητούμενον ὄνομα.* For the arison to the architect, *cf.* 1, 981 a, 30. — Tr.

eibnitz refers perhaps to what he said in *New Essays*, Bk. I., chap. 2, Th. (2), *ante*, pp. 86–87; or in the Preface to his *Codex juris gentium maticus*, § 13 (Dutens, 4, Pt. III., 296): "Ut vero universali demonstra- conficiatur, omne honestum esse utile, et omne turpe damnosum, assu- la est immortalitas animæ, et rector universi Deus," etc. — Tr.

Marcus Aurelius Antoninus, 121–180, the noblest of the Roman Emperors, e *Meditations* or *Thoughts* exhibit the Stoic philosophy at its best on the l and religious side, and present a morality nearer to that of the New ment than that of any other pagan writer. Eds. of the Greek Text *αὐτον* by J. M. Schultz, Leipzig, 1802, reprinted by Tauchnitz, 1821, and would not be so well grounded always without these beautifu and grand views which the order and harmony of the univers open for us even in a future without limits; otherwise th tranquillity of the soul would be only what is called a force patience, so that we may say that *natural theology*, comprisin two parts, theoretical and practical, contains altogether rea metaphysics and the most perfect ethics.[1]

§ 12. *Ph.* There is doubtless knowledge which is far re

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by J. Stich, Leipzig, 1882. Eng. trans., *The Thoughts of the Emperor M Aurelius Antoninus*, by Geo. Long, revised ed. in Bohn's Class. Library; als Boston: Ticknor and Fields, 1864. On his life and philosophy, *cf.* Zeller *Philos. d. Griech.*, III., 1 [Vol. 5], 754–763, 3d ed., 1880; Capes, *Stoicism* (i series of "Chief Anct. Philosophies," pub. by the Soc. for promoting Chris tian Knowledge), chap. 13, pp. 200–239, London, 1880; F. W. Farrar, *Seeker after God*, pp. 257–317, London, Macmillan & Co., 1877.

Epictetus, the date of whose birth and death is unknown, lived in Rom under Nero, 54–68, and his successors, and, when Domitian in 94 banished a philosophers from the Imperial City, went to Nicopolis in Epirus, and ther taught till his death, which appears to have occurred in the reign of Traja 98–117, or shortly after. At first a slave, but afterwards a freedman, he repr sented Stoicism in the cottage, while in Aurelius we see it on the throne. H left no writings, but his discourses, Διατριβαί, were carefully taken down a far as possible in his own words as he uttered them, by his pupil and admire Arrian. The best ed. is that by Schweighäuser, 6 vols., 8vo, Leipzig, 179 1800. Eng. trans., *The Discourses of Epictetus, with the Encheiridion an Fragments*, by Geo. Long, in Bohn's Class. Library; also by T. W. Higginso Boston: Little, Brown & Co., 1865. On his life and philosophy, *cf.* Zelle *Philos. d. Griech.*, III., 1 [Vol. 5], 738–754, 3d ed., 1880; Capes, *Stoicism*, cha 12, pp. 180–199; Farrar, *Seekers after God*, pp. 186–256, London, 1877. — Tr.

[1] The old scholasticism made natural theology a part of metaphysics, whic included besides natural theology, ontology, cosmology, and psychology. C Thos. Aquinas, *Summa Theol.*, Pt. I., Quest. 1, Art. 1, *ad fin.*: "Unde the logia, quæ ad sacram doctrinam pertinet, differt secundum genus ab illa the logia quæ pars philosophiæ ponitur." Leibnitz, in a writing without place date, which Gerhardt (*Leibniz. philos. Schrift.*, 4, 268, note **) thinks w undoubtedly addressed to the Duchess Sophie, says (G. *op. cit.*, 4, 292, a Foucher de Careil, *Nouvelles lettres et opuscules de Leibniz inédits*, Pari 1857, p. 25): "En effet la metaphysique est la théologie naturelle, et le mên Dieu qui est la source de tous les biens, est aussi le principe de toutes les co noissances." *Cf.* also *Discours de metaphys.*, § 28, G. 4, 453.

Leibnitz finds the source of ethical truths in natural theology, because Go the idea of whom is the subject of natural theology, is also the object of mar highest moral aspiration and effort, so far as he seeks lovingly to comprehe him, a point of view from which Leibnitz sought to develop the ethical co ceptions published under the title of *Definitiones ethicæ*, G. 7, 73 *sq.*, Erdman 670, trans. Duncan, *Philos. Wks. of Leibnitz*, 130, and which controls t thought-development in the Preface to the *Codex juris gentium diplomatici cf.* § 13, Dutens, 4, Pt. III., 296, in the *Théodicée*, Preface, G. 6, 26–28, E. 4 Jacques, 2, 3–4, Janet, 2, 3–4, and in the *Discours de metaphys.*, §§ 2–4, 35– G. 4, 427–430, 460–463. — Tr.

ed from being trifling or purely verbal. But this last s to be that in which two abstracts are affirmed the one ne other; for example, that *parsimony is frugality*, that *tude is justice;* and however specious these and other ositions sometimes appear at first sight, yet when we ; their force, we find that it all amounts to nothing else the signification of the terms.

i. But the significations of terms, *i.e.* definitions united identical axioms, express the principles of all demonstra- ;: and as these definitions can make known at the same the ideas and their possibility, it is plain that what nds on them is not always purely verbal. As for the nple that *gratitude is justice*, or rather a part of justice, it t to be despised, for it shows that what is called *actio ati*,[1] or the complaint which can be made against the ateful, should be less neglected in the tribunals. The ans received this action against the Liberti,[2] or freedmen, still to-day it should have place as regards the revocation ifts. For the rest, I have already said elsewhere[3] that ract ideas also may be attributed to one another, the genus ne species, as in the statements: *duration is a continuity, e is a habit;* but universal justice is not only a virtue, it is indeed the complete ethical virtue.

CHAPTER IX

OF OUR KNOWLEDGE OF OUR EXISTENCE[4]

1. *Ph.* We have hitherto considered only the essences of gs, and as our mind knows them only by *abstraction*, by ching them from every particular existence, other than which is in our understanding, they give us absolutely nowledge of any real existence. And the universal prop-

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[1] *f. Cod. Justin.*, 8, 56, 1, 8, and 10.—Tr.

[2] erhardt, Erdmann, and Janet read "les libertes"; Jacques reads "les és."—Tr.

[3] *f.* Bk. III., chap. 3, § 10, Th., *ante*, p. 313.—Tr.

[4] ocke's title is, "Of our knowledge of existence," *Philos. Works*, Vol. 2, 3, Bohn's ed.—Tr.

ositions of which we may have a certain knowledge, do n
relate to existence. Further, every time we attribute anythi
to an individual of a genus or a species by a proposition, whi
would not be certain if the same were attributed to the gen
or species in general, the proposition belongs only to the exis
ence and makes known only an accidental union in the thin
existing in particular, as when we say, such a man is learne

Th. Very well, and it is in this sense that the philosophe
also, distinguishing so often between what is *essence* and wh
existence, refer to existence everything which is *accidental*
contingent. Very often we do not even know whether the un
versal propositions, which we know only by experience, a
not perhaps accidental also, because our experience is limite
as in the countries where water is not frozen, this propositi
which will be formed about it, that water is always in a flu
state, is not essential, and we know it by coming into cold
countries. But we may take *the accidental* in a more limit
sense, so that there will be, as it were, a mean between it a
the essential; and this mean is *the natural* (*le naturel*), *i.e.* th
which does not belong to the thing necessarily, but whic
nevertheless, agrees with it of itself if nothing prevent
Thus, some one might maintain that it is not indeed esse
tial, but that it is at least natural, for water to remain flui
We might maintain this, I say, but it is not, however,
demonstrated fact, and perhaps the inhabitants of the moo
if there are any, would have reason to believe the stateme
no less grounded that it is natural for water to be froze
There are other cases, however, where the natural is le
doubtful; for example, a ray of light always continues straig
in the same medium unless it accidentally meets some surfa
which reflects it. For the rest, Aristotle was accustomed
refer to matter the source of *accidental* things;[1] but then
must understand thereby secondary matter, *i.e.* the heap
mass of bodies.

§ 2. *Ph.* I have already[2] remarked, following the excelle
English author who wrote the Essay concerning Understan
ing, that we know *our existence* by intuition, that *of God*

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[1] *Cf. Metaphys.*, E, 2, 1027^{a}, 14: ὥστε ἡ ὕλη ἔσται αἰτία ἡ ἐνδεχομένη παρὰ τὸ
ἐπὶ τὸ πολὺ ἄλλως τοῦ συμβεβηκότος. — Tr.

[2] *Cf.* Bk. IV., chap. 3, § 21, *ante*, p. 439. — Tr.

nonstration, and that *of other things* by sensation. § 3. w this intuition which makes known our existence to our- ves, makes it known to us with an evidence complete, capable of being proved and having no need of proof; so at even when I attempt to doubt all things, this doubt itself es not allow me to doubt my own existence. In fine, we ve on this point the highest degree of certainty that can be agined.

Th. I am entirely agreed as to all this. And I add that e immediate apperception of our existence and of our oughts furnishes us the first truths *a posteriori,* or of fact, . the *first experiences,* as the identical propositions contain e first truths *a priori,* or of reason, *i.e. the first lights* (*les emières lumières*).[1] Both are incapable of proof, and may be lled *immediate;* the former, because they are immediate tween the understanding and its object; the latter, because ey are intermediate between the subject and the predicate.

CHAPTER X

OF OUR KNOWLEDGE OF THE EXISTENCE OF GOD

§ 1. *Ph.* God having given to our soul the faculties with ich it is adorned, has not left himself without a witness; r the senses, perception, and the reason furnish us manifest oofs of his existence.

Th. God has not only given the soul faculties suitable for owing him, but he has also impressed upon it characters ich indicate him, although the soul needs faculties to per- ive these characters. But I do not wish to repeat the discus- ons we have already had upon ideas and innate truths, nong which I reckon the idea of God and the truth of his istence. Let us come rather to the fact.

Ph. Now, although the existence of God is the truth most sily proved by the reason, and its evidence equals, if I am t mistaken, that of mathematical demonstrations, it yet mands attention. It needs at once only reflection upon ourselves and our own indubitable existence. § 2. Thus I su pose that *every one knows that something actually exists,* and th thus there is a real being. If there is any one who can dou his own existence, I declare that I do not speak to him. § We know also by an intuitive knowledge that *bare nothing ca not produce a real being.* Whence it follows, with mathema ical evidence, that *something has existed from all eternity,* sinc everything which has a beginning must have been produce by something else. § 4. Now every being which draws i existence from another, draws also from it all it has, an all its faculties. The eternal source of all beings is the also the principle of all their powers, so that *this eternal bein must be also all-powerful.* § 5. Further, man finds in himse knowledge. *There is,* then, *an intelligent being.* Now it is in possible for a thing absolutely destitute of knowledge and pe ception to produce an intelligent being, and it is contrary t the idea of matter, deprived of thought, to produce it of itsel The source of things is then intelligent, and *there has been a intelligent being from all eternity.* § 6. An eternal, very powe ful, and very intelligent being is what we call *God.* If, how ever, any one were found so unreasonable as to suppose tha man is the only being having knowledge and wisdom, but tha nevertheless, he has been formed by pure chance, and that is this same principle, blind and without knowledge, whic carries on all the rest of the universe, I shall advise him t examine at his leisure the wholly solid and emphatic censu of Cicero ("De Legibus," lib. 2). Certainly, he says, no on could be so foolishly arrogant as to think that he has withi himself an understanding and reason, and yet that there is n intelligence governing the heavens and all this vast universe From what I have just said it clearly follows that we have more certain knowledge of God than of anything else outside u

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[1] Schaarschmidt translates: "die ersten Erleuchtungen aus dem Innern," . the first illuminations from within. — Tr.

Th. I assure you, sir, with perfect sincerity, that I am ex tremely sorry to be obliged to say something against th demonstration; but I do it solely in order to give you an op portunity to fill up the void. It is principally in the pa

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[1] Cicero, *De Leg.*, Bk. II., chap. 7: "Quid est enim verius, quam nemine esse oportere tam stulte arrogantem, ut in se rationem et mentem putet iness in cœlo mundoque non putet? Aut ut ea quæ vix summa ingenii ratione co prehendat, nulla ratione moveri putet?" — Tr.

ıere you conclude (§ 3) that something has existed from all ernity. I find therein some ambiguity, if that means *that ere never has been any time in which nothing existed.* I admit and it follows truly from the preceding propositions by inference wholly mathematical. For if there had always en nothing, there would always have been nothing, nothing ing unable to produce a being; then we ourselves should not , which is contrary to the first truth of experience. But the nsequence appears at once, that by the statement that someing has existed from all eternity, you mean an eternal ing. But it does not at all follow in virtue of what you ve hitherto advanced, that if there has always been someing, there has always been a certain thing, *i.e.* an eternal ing. For certain opponents will say that I have been proced by other things, and these things by others. Further, some admit eternal beings (as the Epicureans their atoms) ey will not think themselves compelled for that reason to mit an eternal being who is the only source of all the hers. For if they should admit that this which gives existce, gives also the other qualities and powers of the thing, ey will deny that a single thing gives existence to the hers, and they will say also that in each thing many others ıst concur. Thus we shall not reach by this alone a source all the powers. Yet it is very reasonable to judge that ere is one, and also that the universe is governed with wism. But when we believe matter susceptible of thought, we ıy be disposed to believe that it is not impossible that it ıy produce something. At least it will be difficult to bring rward a proof which does not show at the same time that it wholly incapable of it; and, assuming that our thought mes from a thinking being, may we take it as admitted, thout prejudice to the demonstration, that this must be ɔd?

§ 7. *Ph.* I do not doubt that the excellent man from whom have borrowed this demonstration is capable of perfecting ; and I shall try to influence him to do so, since he could arcely render a greater service to the public. You also dere it. This makes me think that you do not consider it cessary, in order to shut the mouths of atheists, to make erything revolve upon the existence of the idea of God in us, as some do, who attach themselves too strongly to thi favorite discovery even to rejecting all other demonstration of the existence of God,[1] or at least attempting to weake them and forbidding to employ them as if they were weak o false; although at bottom they are proofs which show us s clearly and in a manner so convincing the existence of thi sovereign being by the consideration of our own existence and of the sensible parts of the universe, that I think no wis man ought to resist them.

Th. Although I am for innate ideas, and in particular fo that of God, I do not think that the demonstrations of th Cartesians drawn from the idea of God are perfect. I hav shown fully elsewhere[2] (in the "Actes de Leipsic," and i the "Memoires de Trevoux") that what Descartes has bor rowed from Anselm,[3] Archbishop of Canterbury, is very beau

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[1] Descartes relied mainly, and Spinoza exclusively, on the ontological or *priori* argument for the proof of God's existence. Spinoza's system, in fact did not admit the possibility of any other argument, since God is the only substance and all other things are merely modes, accidents, or expressions of tha substance. *Cf.* Descartes, *Meditations*, III. and V., Veitch's trans., pp. 115 *sq.* 143 *sq.*, *Princip. Philos.*, Pt. I., §§ 13 *sq.*, Veitch, pp. 198 *sq.*, *Discours de l Methode*, Pt. IV., Veitch, pp. 34 *sq.;* Spinoza, *Ethica*, Pt. I., ed. Van Vloten an Land, Vol. 1, pp. 39 *sq.*, trans. Elwes, Vol. 2, pp. 45 *sq.;* letter to De Vries V. V. & L., 2, 34, trans. E. 2, 315. Also on Descartes, Windelband, *Hist. of Philos* trans. by Tufts, 392–3, 405; on Spinoza, *ibid.*, 401, 407–10. Leibnitz, while seeking to correct and complete the ontological argument, makes the teleologica form of the *a posteriori* argument, in his doctrine of monads and their pre established harmony, one of the constituent principles of his system. *Cf. Confessio naturæ contra atheistas*, 1668, Gerhardt, 4, 105–109, Erdmann, 45–4 Dutens, 1, 5–8; *Principes de la nature et de la grâce*, §§ 11 *sq.*, G. 6, 603, E 716, trans. Duncan, 214, *Monadologie*, §§ 38 *sq.*, G. 6, 613, E. 708, trans. D., 22 Leibnitz's doctrine of monads demands the existence of God as its necessar ground and complement. *Cf. ante*, p. 363, note 1. He regarded all the arguments for God's existence as valuable and urged men to perfect them. *C infra*, p. 505, note 2. On his doctrine, *cf.* Windelband, *op. cit.*, 420–425.—Tr

[2] Leibnitz means the *Med. de Cog., Ver. et Id.*, published in the "Act Erud. Lips.," Nov., 1684, and found in Gerhardt, 4, 422, Erdmann, 79, Dutens 2, Pt. I., 14, Janet, 2, 514 (in French), trans. Duncan, 27; and the *De la démonstration Cartesienne*, etc., published in the "Mémoires de Trévoux," 1701, G 4, 405, E. 177, Dutens, 2, Pt. I., 254, Janet, 2, 568, trans. Duncan, 136.—Tr.

[3] Anselm, 1033–1109, archbishop of Canterbury from 1093 till his death, an the real founder of the Christian Scholasticism of the Middle Age, was a distinguished philosopher and theologian, whose fame rests chiefly upon his ontological or *a priori* argument for the existence of God, and his theory of th incarnation and atonement. His *Opera* are found in Migne, *Patrol. Cu Compl.*, Vol. 155. The most important for philosophy are the *Cur Deu Homo?*, the *Monologium*, and the *Proslogium*. The two latter, with Gaunilo'

iful and really very ingenious, but that there is still a gap
herein to be filled. This celebrated archbishop, who was
vithout doubt one of the most able men of his time, congratu-
ates himself, not without reason, for having discovered a
neans of proving the existence of God *a priori*, by means of
ts own notion, without recurring to its effects. And this is
ery nearly the force of his argument: God is the greatest,
r (as Descartes says) the most perfect of beings, or rather a
eing of supreme grandeur and perfection, including all de-
rees thereof. That is the notion of God. See now how
xistence follows from this notion. To exist is something
nore than not to exist, or rather, existence adds a degree to
randeur and perfection, and as Descartes states it, existence
s itself a perfection. Therefore this degree of grandeur and
erfection, or rather this perfection which consists in exist-
nce, is in this supreme all-great, all-perfect being: for otherwise
ome degree would be wanting to it, contrary to its definition.
onsequently this supreme being exists. The Scholastics,
ot excepting even their Doctor Angelicus,[1] have misunder-

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efutation of the *Proslogium*, entitled *Liber pro insipiente*, and Anselm's
eply, *Liber apologeticus*, were edited by C. Haas, Tübingen, 1863. There is
French trans., with notes, of the *Monologium* and *Proslogium* by Bouchitté,
e Rationalisme Chrétien, Paris, 1842; and an English trans. of the *Pros-*
gium and *Lib. apologet.* in the "Bibliotheca Sacra," Vol. 8 [1851], pp. 529
., 704 *sq.*, and of the *Cur Deus Homo?*, *ibid.*, Vol. 11 [1854], pp. 729 *sq.*, 12
855], 52 *sq.* His ontological argument is found in the *Proslogium* and the
iber apologeticus. An excellent account of it is given in Ueberweg-Heinze,
esch. d. Philos., 7th ed., Berlin, 1888, Vol. 2, p. 152 *sq.*, Eng. trans. from 4th
erman ed., New York, 1871, Vol. 1, pp. 383–86. *Cf.* also Windelband, *Hist.*
f Philos., trans. by Tufts, pp. 291–294; Mulford, *The Republic of God*, pp. 4,
4th ed., Boston, 1882. For further account of Anselm's life and philosophy,
. Hasse, *Anselm von Canterbury*, 2 vols., Leipzig, 1843, 1852 (ontolog. argt.
Vol. 2, pp. 233–286); Stöckl, *Gesch. d. Philos. d. Mittelalters*, 1, 151–208;
auréau, *Histoire de la Philos. Scholastique*, Paris, 1872–80, 1, 265–87.

For expositions and criticisms of the ontological argument, *cf.* Kant, *Krit.*
r. Vernunft., ed. Rosenkranz and Schubert, 2, 462–470, ed. Hartenstein,
38, 2, 456–464, 1867, 3, 405–411, ed. Kirchman, Leipzig, 1877, 1, 476–483, trans.
üller, 1 vol. ed., 509–518; E. Caird, *The Philos. of Kant*, Glasgow, 1877,
0, 642, *The Crit. Philos. of Kant*, New York, 1889, 2, 110, 120; Hegel,
orlesungen ü. d. Beweise vom Dasein Gottes, in his *Philos. d. Relig.*,
nhang, 2, 357 *sq.*, 2d ed., Berlin, 1840; Dorner, *Christ. Glaubenslehre*, 1, 201
., Eng. trans., 1, 214 *sq.*; Pfleiderer, *Philos. d. Relig.*, 2, 271 *sq.*, 2d ed.,
erlin, 1884, Eng. trans., 3, 271 *sq.* — Tr.

[1] *I.e.* Thomas Aquinas, 1225 or 1227–1274. For his critique of the ontologi-
l argument, *cf.* *Summa theologiæ*, Pt. I., Quest. 2, Article 1; *Contra gen-*
les, Bk. I., chap. 11; and Stöckl, *Gesch. d. Philos. d. Mittelalters*, II., 1 [Vol.

stood this argument, and have taken it as a paralogism; in which respect they were altogether wrong, and Descartes, who studied quite a long time the scholastic philosophy at the Jesuit College of La Fleche, had great reason for re-establishing it. It is not a paralogism, but it is an imperfect[1] demonstration, which assumes something that must still be proved in order to render it mathematically evident; that is, it is tacitly assumed that this idea of the all-great or all-perfect being is possible, and implies no contradiction. And it is already something that by this remark it is proved that, *assuming that God is possible, he exists*, which is the privilege of divinity alone. We have the right to presume the possibility of every being, and especially that of God, until some one proves the contrary. So that this metaphysical argument already gives a morally demonstrative conclusion, which declares that according to the present state of our knowledge we must judge that God exists, and act in conformity thereto. But it is to be desired, nevertheless, that clever men achieve the demonstration with the strictness of a mathematical proof, and I think I have elsewhere[2] said something that may serve this end. The other argument of Descartes, which undertakes to prove the existence of God because the idea of him is in our soul, and must have come from the original, is still less conclusive. For in the first place this argument has this defect, in common with the preceding, that it assumes that there is in us such an idea, *i.e.* that God is possible. For what Descartes alleges, that in speaking of God we know what we

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2], 498. Spinoza also censures Aquinas for his rejection of the ontological argument; *cf. Korte Verhandeling van God*, in Spinoza, *Opera*, ed. Van Vloten and Land, Vol. 2, p. 265, and Schaarschmidt's German trans. of the same (Vol. 18 of J. H. v. Kirchmann's *Philos. Bibliothek*), p. 6, 2d ed., Berlin, 1874. — TR.

[1] Gerhardt reads "parfaite"; Erdmann, Jacques, and Janet "imparfaite." The reading of G. is evidently a Ms. or typographical error, as the sense requires that of E., J., and J. — TR.

[2] Leibnitz here probably refers to the *De la démonstration Cartesienne*, etc., 1701, Gerhardt, 4, 405, Erdmann, 177, Dutens, 2, Pt. I., 254, trans. Duncan, 136. But *cf.* also G. 4, 292–294, 401–403, trans. Duncan, 132–136; *Animadversiones in partem generalem Principiorum Cartesianorum*, 1692, Pt. I., ad art. 14, 18, 20, G. 4, 358–60, trans. Duncan, 50–51, and Letters to Jacquelot, Nov., 1702, G. 3, 442 *sq.*, Letter to Conring, Jan. 3, 1678, G. 1, 188, E. 78; correspondence with Eckhard, G. 1, 212 *sq.*; and Stein, *Leibniz u. Spinoza*, Beilage VII., p. 306: *Probatio existentiæ Dei ex ejus essentia.* — TR.

re saying, and that consequently we have an idea, is a deceptive indication, since in speaking of perpetual mechanical novement, for example, we know what we are saying, and yet this movement is an impossible thing, of which, consequently, we can have only an apparent idea. Secondly, this same argument does not sufficiently prove that the idea of God, if we have it, must come from the original. But I do not wish to delay here at present. You will say, sir, to me, that recognizing in us the innate idea of God, I ought not to say that we may question whether there is one. But I permit this doubt only in relation to a strict demonstration based upon the idea alone. For we are otherwise sufficiently assured of the idea and of the existence of God. And you will remember that I have shown how ideas are in us, not always in such wise that we are conscious of them, but always in such wise that we may draw them from our own depths and make them perceivable. And this is also my belief concerning the idea of God, the possibility and existence of which I hold to be demonstrated in more than one way. And the *pre-established harmony* itself furnishes a new and incontestable means of so doing.[1] I believe also that nearly all the means which have been employed to prove the existence of God are good and might be of service, if we would perfect them, and I am not at all of the opinion that we should neglect that drawn from the order of things.[2]

§ 9. *Ph.* It will perhaps be proper to insist a little upon this question, whether a thinking being can come from a non-thinking being deprived of all sensation and knowledge such as matter may be. § 10. It is indeed quite evident that a part of matter is incapable of producing anything of itself, and of giving itself motion; its motion must then either be eternal or be impressed upon it by a more powerful being. If this motion were eternal, it would always be incapable of producing knowledge. Divide matter into as many little parts as you please, in order, as it were, to spiritualize it, give it all figures and motions you wish, make it a globe, a cube, a prism, a cylinder, etc., whose diameters are only the one-millionth part of a gry, which is one-tenth of a line, which is one-tenth of an inch, which is one-tenth of a philosophical foot, which is one-third of a pendulum, each vibration of which in the latitude of forty-five degrees is equal to one second of time. This particle of matter, small as it is, will act upon other bodies of a size proportional to itself no differently than bodies of an inch or a foot in diameter act among themselves. And we may hope as rationally to produce feeling, thought, and knowledge, by putting together gross parts of matter in a certain figure and motion, as by means of the smallest parts of matter in the world. These last knock, push, and resist each other just as the great ones do, and this is all they can do. But if matter could draw from its bosom feeling, perception, and knowledge, immediately and without machinery, or without the aid of figures and motions, then their possession must be an inseparable property of matter and of all its parts. To which one could add that, though the general and specific idea we have of matter leads us to speak of it as if it were a thing single in number, yet all matter is not properly one individual thing, which exists in a material being or a single body that we know or can conceive. So that if matter were the first eternal thinking being, there would not be one eternal infinite and thinking being, but an infinite number of eternal infinite[1] thinking beings, independent of one another, whose forces would be limited and thoughts distinct, and who consequently could never produce this order, harmony, and beauty which is seen in nature. Whence it necessarily follows that the eternal first being cannot be matter. I hope that you, sir, will be more content with this reasoning taken from the celebrated author of the preceding demonstration than you have appeared to be with his demonstration.

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[1] *Cf. ante*, p. 363, note 1. — TR.

[2] Leibnitz's idea is that all right thought, if thorough-going and deep enough, must at last lead back to God, its original source. None of the proofs of God's existence are therefore to be cast aside, but the essential significance of each is to be sought out and ascertained and its form perfected, and all are to be united into one organic whole. — TR.

Th. I find the present reasoning the most solid in the world, and not only exact, but further profound and worthy of its author. I am perfectly of his opinion that no combination and modification of the parts of matter, however small they

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[1] Locke has "finite" here, *Philos. Works*, Vol. 2, p. 237, Bohn's ed. Gerhardt, Erdmann, Jacques, and Janet all read "infinis." — TR.

y be, can produce perception; forasmuch as the gross par-
les could not give it (as is manifestly admitted) and as
is proportional in the small parts to what may take place
the great. It is furthermore an important remark regard-
g matter which the author makes here, that it must not be
ken as a thing single in number, or (as I have been wont
state it) as a true and perfect *monad* or *unity*, since it is
ly a *mass* of an infinite number of beings. Here this excel-
it author needed but a step to arrive at my system. For in
t I give perception to all these infinite beings, each one of
ich is like an animal endowed with a soul (or some active
alogous principle which makes its true unity), together
th what is necessary to this being in order to be passive
d endowed with an organic body. Now these beings have
ceived their nature, active as well as passive (*i.e.* what they
ve of immaterial and material), from a general and supreme
use, because otherwise, as the author very well says, being
dependent of one another, they could never produce this
der, *harmony*, and *beauty* which is seen in nature. But
is argument, which appears to possess only a moral certainty,
pushed to a necessity wholly metaphysical by the *new kind*
harmony I have introduced, which is the *pre-established har-*
ony. For each one of these souls expressing in its way what
kes place outside it and being unable to have any influence
other particular beings, or rather, being obliged to draw
is expression from the depths of its own nature, each one
ust necessarily have received this nature (or this internal
ason of the expression of that which is outside) from a
iversal cause upon which all these beings depend and which
akes one perfectly in accord and correspondent with another;
thing impossible without an infinite knowledge and power
d with an artifice great as regards especially the spontane-
s agreement of the mechanism with the acts of the rational
ul. The illustrious author[1] who made objections against it

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[1] Leibnitz here refers to Pierre Bayle, 1647–1706, a celebrated critic, philoso-
er, and controversialist, who published in his *Dictionnaire historique et*
itique, Rotterdam, 1695–97, 2 vols., 2d ed., revised and enlarged, 1702, article
Rorarius," a criticism of Leibnitz's *Systême nouveau de la nature*, etc., pub-
hed in the "Jour. des Savants," June, 1695, pp. 449 *sq*. Leibnitz sought to
pel his criticisms in a writing, July, 1698, addressed to Basnage de Beauval,
itor of the "Histoire des ouvrages des Sçavans," and published therein,

in his wonderful Dictionary doubted, as it were, whether thi condition of things did not surpass all possible wisdom, sayin that the wisdom of God did not appear to him too great fo such an effect, and recognized at least that never had th feeble conceptions we may have of the divine perfection bee so set in relief.

§ 12. *Ph.* How delighted I am at this agreement of you thoughts with those of my author! I hope you will not be displeased, sir, if I give you an account also of the rest of hi reasoning upon this article. First he examines whether th thinking being, upon whom all the other intelligent being depend (and with much stronger reason all other beings) i material or not. § 13. It is objected that a thinking bein might be material. But he replies that if that were so, it i enough that this be an eternal being which has an infinit knowledge and power. Further, if thought and matter can b separated, the eternal existence of matter will not follow from the eternal existence of a thinking being. § 14. It wil further be asked of those who make God material whethe they imagine that every part of matter thinks. In that cas it will follow that there would be as many Gods as particle of matter. But if each part of matter does not think, the there is a thinking being composed of non-thinking parts which has already been disproved. § 15. To say that an single atom of matter thinks, and that the other parts

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July, 1698, p. 329 *sq.*, *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 4, 517–24, Erdmann 150–154, Jacques, 1, 481–87, Dutens, 2, Pt. I., 74–80. In the 2d ed. of his *Dictio naire*, p. 2599 *sq.*, Eng. trans. from 2d ed., carefully collated with the sever eds. of the original, 5 vols., London, 1738, 4, 900–916, Bayle again discusse Leibnitz's views, and to this discussion Leibnitz made a thorough and searc ing reply, first published by Gerhardt, 4, 524–54, with the title: *Extract d Dictionnaire de M. Bayle, article Rorarius*, p. 2599 *sqq. de l'Edition de l'a* 1702 *avec mes remarques.* Leibnitz pub. a revision of this detailed refutatio in 1712, in the "Histoire critique de la République des Lettres," Vol. 2, p. 7 *sq.* Gerhardt has published it, 4, 544–71, with many additions by Leibnit *Cf.* also Erdmann, 183–191, Dutens, 2, Pt. I., 80–93, Janet, 2, 579–94. Leibni elsewhere frequently refers to Bayle, especially in the *Théodicée*, in the pr liminary essay entitled, *Discours preliminaire sur conformité de la foi avec raison*, in which Bayle's objections are carefully examined, and in Pts. II. an III., where he is cited on nearly every page, and which presents a continuou polemic against him. The composition of the *Théodicée* was occasioned by t discussions held by Leibnitz with Queen Sophie Charlotte of Prussia on phil sophical and theological topics suggested by the reading of Bayle's Dictionar For the correspondence of Leibnitz and Bayle, *cf.* Gerhardt, 3, 21 *sq.*—Tr.

ɔugh equally eternal, do not think, is to make the *gratuitous* ,tement that one part of matter is infinitely above another d produces thinking beings not eternal.[1] § 16. If we will ve it that the thinking eternal and material being is a cer- n particular mass of matter whose parts are non-thinking, fall back upon the view which has been disproved; for the rts of matter are united in vain, they can acquire only a w local relation, which cannot give them knowledge. § 17. matters not whether this mass is at rest or in motion. If rest, it is only an inactive mass which has no privilege ɔve one atom; if in motion, since this motion, which distin- ishes it from other parts, is destined to produce thought, these thoughts will be accidental and limited, each part by elf being without thought, and having nothing which regu- ,es its movements. Thus there will be neither freedom, nor ɔice, nor wisdom, any more than in simple brute matter. .8. Some believe that matter is at least coeternal with God. ıt they do not say why: the production of a thinking being, ıich they admit, is much more difficult than that of matter ıich is less perfect. And perhaps (says the author) if we ɔuld withdraw ourselves a little from common ideas, give ngs to our mind, and engage in the profoundest examina- ɔn we could make of the nature of things, *we might be able to :ain a conception, though in an imperfect manner, how matter ıy at first have been made, and how it commenced to exist by : power of this eternal first being.* But we should see at the me time that to give being to a spirit is an effect of this ərnal and infinite power much more difficult to comprehend. ıt because this would perhaps lead me too far (he adds) *om the notions upon which the philosophy now in the world is sed,* it would not be excusable in me to deviate so far from em or to inquire, so far as grammar would permit, whether bottom the commonly established opinion is contrary to is particular view; it would be wrong, I say, for me to gage in this discussion, especially *in this corner of the world,* ıere the received doctrine is good enough for my purpose, ıce it posits as an indubitable thing that if the creation or ginning of any *substance* whatever from nothing be once admitted, the creation of every other substance, except the Creator himself, may with the same facility be assumed.

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[1] Leibnitz anticipates this argument of Locke by his law of continuity.—
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Th. You have given me genuine pleasure, sir, by giving me some account of a profound thought of your clever author, which his too scrupulous prudence has prevented him from producing in its entirety. It would be a great wrong, if he should suppress it and leave us there, after having made our mouths water. I assure you, sir, that I believe there is something beautiful and important concealed behind this enigmatical manner.[1] The *substance* in large letters might make one suspicious that he conceives the production of matter in the same way as that of the accidents, which we find no difficulty in drawing from nothing: and in distinguishing his particular thought *from the philosophy now prevalent in the world or in that corner of the earth*, I do not know but that he had in mind the Platonists, who take matter as something fleeting and transitory, after the manner of the accidents, and had an altogether different idea of spirits and souls.

§ 19. *Ph.* Finally, if some deny *creation*, by which things are made from nothing, because they cannot conceive it, our author, writing before he knew your discovery on the reason of the union of the soul and the body, holds against them, that they do not understand how voluntary movements are produced in bodies by the will of the soul, and they cease not to believe the fact, being convinced by experience; and he replies with reason to those who answer that the soul being unable to produce a new motion, produces only a new determination of the animal spirits, he replies to them, I say, that the one is as inconceivable as the other. And nothing can be better said than what he adds on this occasion, that to wish to limit what God can do to what we can comprehend, is to give an infinite extent to our comprehension, or to make God himself finite.

Th. Although now the difficulty regarding the union of the soul and the body has in my view been removed, there remain difficulties elsewhere. I have shown *a posteriori* by the pre-

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[1] With regard to this riddle or enigma, Professor Schaarschmidt informs me that Raspe, in his ed. of the *Nouveaux Essais*, 1765, says, p. 409: "Mr. Coste l'a expliqué d'après le Chevalier Newton dans la remarque (2) au § 18, de ce chapitre. Edition de Locke d'Amsterdam, de 1755, p. 523." — Tr.

ablished harmony, that all the monads have received their
gin from God and depend upon him. But we cannot com-
hend the how in detail; and at bottom their conservation
nothing else than a continual creation,[1] as the Scholastics
re very clearly recognized.

CHAPTER XI

OUR KNOWLEDGE OF THE EXISTENCE OF OTHER THINGS

1. *Ph.* As, then, the existence of God only has a necessary
nection with ours, the ideas we may have of anything no
re prove the existence of this thing than the portrait of a
n proves his existence in the world. § 2. The certainty,
vever, I have of black and white upon this paper by means
sensation is as great as that of the motion of my hand,
ich is second only to the knowledge of our own existence,
of that of God. § 3. This certainly deserves the name of
wledge. For I do not believe that any one can seriously be
sceptical as to be uncertain of the existence of things which
sees and feels. At least, he who can carry his doubts so
will never have any controversy with me, since he can
er be certain that I say anything contrary to his opinion.
perceptions of sensible things § 4. are produced by exter-
causes which affect our senses, for we do not acquire these
ceptions without the organs, and if the organs sufficed,
y would always produce them. § 5. Further, I sometimes
erience the fact that I cannot prevent these ideas from
ng formed in my mind, as, for example, the light, when I
e my eyes open in a place into which the light may enter:
le I can lay aside the ideas which are in my memory.
re must be, then, some external cause of this living im-
ssion whose efficacy I cannot overcome. § 6. Some of these

Cf. Observatio ad Recensionem libri de Fidei et Rationis consensu a Do-
Jaqueloto editi, mense Octobri proxime præcedenti factam, pub. in the
ta Erud. Lips.," Dec. 1705, p. 553, *ad fin.*, Gerhardt, 6, 556–8, Erdmann,
4, Dutens, 2, Pt. I., 256–8; *Théodicée*, Pt. III., §§ 382, 385, 391–3, G. 6,
E. 614, Jacques, 2, 290, Janet, 2, 388, Dutens, 1, 387; Pichler, *Die The-*
e des Leibniz, 1, 252, München, 1869; *Monadologie*, § 47, G. 6, 614, E. 708,
ues, 2, 397, Janet, 2, 601, trans. Duncan, 225; Nolen, *Leibniz, La Mona-*
gie, 3d ed., Paris, 1893, pp. 148, 211. — Tr.

impressions are produced in us with pain, although afterward we remember it without feeling the least inconvenience. An although mathematical demonstrations do not depend on th senses, yet the examination made of them by means of diagrams is of much use in proving the evidence of our sight, an seems to give to it a certainty approaching that of demonstration itself. § 7. Our senses also in many cases bear witnes to each other. He who sees the fire may feel it if in doubt o it. And in writing this, I see that I can change the appearance of the paper, and say beforehand what new idea it i going to present to the mind; but, when these characters ar traced, I can no longer avoid seeing them as they are, i addition to the fact that the sight of these characters wi make another man utter the same sounds. § 8. If any on thinks that all this is but a long dream, he may dream, if h pleases, that I make this response to him, that our certaint based upon the testimony of our senses is as perfect as ou nature allows, and our condition demands. He who sees candle burning, and tries the heat of the flame, which hurt him if he does not withdraw his finger, will not ask for greater certainty in order to govern his actions, and if th *dreamer* did not so do (*i.e.* withdraw his finger) he would fin himself awakened. Such an assurance then suffices us, whic is also as certain as pleasure or pain, two things beyond whic we have no interest in knowledge or the existence of thing § 9. But beyond our actual sensation, there is no knowledg and it is only *probability*, as when I believe that there are me in the world; of which fact there is a high degree of probab ity, although at present, alone in my chamber, I see none them. § 10. It is also folly to expect a demonstration of ever thing and to act not in accord with clear and *evident* trut though they are not demonstrable. A man who should use them could be assured of nothing but of dying in a ve short time.

Th. I have already remarked in our preceding conferenc that the truth of sensible things is justified by their conne tion,[1] which depends upon the intellectual truths grounded reason and upon constant observations in the sensible thin emselves even when the reasons do not appear. And as ese reasons and observations give us the means of judging e future as related to our interest, and as success corresponds ıth our rational judgment, we could not demand, nor have deed, a greater certainty regarding these objects. We can so give a reason for dreams themselves, and for their slight nnection with other phenomena. Nevertheless, I believe at we might extend the appellation of knowledge and of rtainty beyond actual sensations, since clearness and manistness go beyond, which I consider as a species of certainty; ıd it would undoubtedly be folly seriously to doubt whether ere are men in the world when we do not see any. *To doubt riously* is to doubt in relation to the practical, and we might ke *certainty* as a knowledge of truth which we cannot doubt relation to the practical without madness; and sometimes e take it still more generally, and apply it to cases where e could not doubt without deserving to be severely blamed. ut *evidence* would be a luminous certainty, *i.e.* where we do ɔt doubt because of the connection we see between ideas. ccording to this definition of certainty, we are certain that ɔnstantinople is in the world, that Constantine, Alexander ıe Great, and Julius Cæsar lived. It is true that some peasıt of Ardennes might justly doubt about these, for lack of ıformation; but a man of letters and of the world could not ɔ so without great derangement of mind.

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[1] *Cf. New Essays*, Bk. IV., chap. 2, § 14, Th. (2), *ante*, p. 422, note 1. Fr the idealistic point of view, the only possible criterion of the truth of the p

§ 11. *Ph.* We are assured in truth by our memory of many ıings which are past, but we shall not be able to judge easily hether they exist still. I saw yesterday water, and a certain ımber of beautiful colors upon bubbles formed upon this ater. Now I am certain that those bubbles as well as that ater existed, but I do not know with any more certainty the resent existence of the water than that of the bubbles, though the former is infinitely more probable because the ater has been observed to be lasting and the bubbles to disɔpear. § 12. Finally, outside of ourselves and God we know ɔher spirits only by *revelation*, and we have concerning them ıly the certainty of *faith*.

ɔmena of the senses is the constancy and regularity in their connection or ɔnsecution. *Cf.* also *De modo distinguendi phænomena realia ab imaginais*, Gerhardt, *Leibniz. philos. Schrift.*, 7, 319 *sq.*; Erdmann, 443–445. — TR.

Th. It has already been remarked that our memory some times deceives us. And we put confidence in it or not, accord ing as it is more or less vivid, and more or less connected wit the things we know. And even when we are assured of th principal fact we may often question the circumstances. remember to have known a certain man, for I feel that hi image as well as his voice is not new to me; and this doubl indication is a better guarantee to me than one of the two, bu I cannot remember where I have seen him. It happens, how ever, though rarely, that a person is seen in a dream before h is seen in flesh and blood. And I am assured that a lady of well-known court saw in a dream and described to her friend the person she afterwards married, and the hall in which th betrothal was celebrated, and she did this before she had see or known either the man or the place. They attributed th circumstance to some indefinite secret presentiment; bu chance may produce this effect, since it is quite rare that i happens, besides, dream-images being somewhat obscure, ther is more liberty in connecting them afterwards with certai others.

§ 13. *Ph.* Let us conclude that there are two kinds of prop ositions, the one particular and concerning existence, as, fo example, that an elephant exists; the other general, concern ing the dependence of ideas, as, for example, that men shoul obey God. § 14. The majority of these general and certai propositions bear the name of *eternal truths*, and, in fact, the all are such. This is not because these are propositions act ually formed somewhere from all eternity, or because the are graven upon the mind after some model, which alway existed, but because we are assured that when a creature en riched with faculties and means therefor, applies his thought to the consideration of his ideas, he will discover the trut of these propositions.

Th. Your division appears to return to mine of *proposition of fact* and *propositions of reason.* Propositions of fact als may become general in a way, but it is by induction or obse vation, so that it is only a multitude of similar facts, as whe it is observed that all quicksilver is evaporated by the forc of fire; and this is not a perfect generality, because we d not see its necessity. General propositions of reason ar

cessary, although the reason also furnishes some which are
t absolutely general, and are only probable, as, for example,
ıen we presume an idea to be possible until its contrary is
scovered by a more exact research. There are finally *mixed*
opositions, drawn from premises, some of which come from
cts and observations, and others are necessary propositions;
d such are a number of geographical and astronomical con-
ısions regarding the globe of the earth and the course of the
ırs, which spring from the combination of the observations
travellers and astronomers with the theorems of geometry
d arithmetic. But as, according to the usage of logicians,
conclusion follows the weakest of the premises[1] and cannot
ve more certainty than they, these mixed propositions have
ly the certainty and generality which belong to the obser-
tions. As for the *eternal truths,* it must be observed that at
ttom they are all conditional and say in effect: such a thing
sited, such another thing is. For example, in saying: *every*
gure which has three sides will also have three angles, I say
thing else than that, supposing there is a figure with three
les, *this same* figure will have three angles. I say *this*
me, and it is in this respect that the categorical proposi-
ons which may be stated unconditionally, although at bot-
m conditional, differ from those called *hypothetical,* as this
oposition would be: *if a figure has three sides, its angles are*
ual to two right angles, in which we see that the *antecedent*
oposition (viz.: the figure of three sides) and the *consequent*
iz.: the angles of the figure of three sides are equal to two
ght angles) have not the same subject as they have in the
eceding case, in which the antecedent was: *this figure has*

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[1] The variously phrased formula: *conclusio sequitur partem debiliorem* or
eriorem; sectetur partem conclusio deteriorem; pejorem sequitur semper
ıclusio partem, is the Scholastic expression of the fundamental principle of
categorical syllogism, according to which the conclusion cannot contain
re than is contained in the premises, or, as given by Hamilton (*Lects. on*
gic, p. 219, Boston, 1873), in his third rule of the syllogism, "The conclu-
n must correspond in quantity with the subsumption [minor premise], and
quality with the sumption [major premise]." Logicians regarded negative
l particular propositions as weaker or worse as related to universal and
ırmative propositions, the negative being weaker in quality and the par-
ular in quantity, so that in the syllogism if one of the premises is particular
conclusion will be particular, and if one of the premises is negative the
ıclusion will be negative. For the history of the subject, *cf.* Prantl, *Gesch.*
Logik, 1, 371, 587; 2, 275; 3, 48. — Tr.

three sides, and the consequent: *the said figure has three angle*
Although, again, the hypothetical may often be transforme
into the categorical, merely by changing a little the term
as if instead of the preceding hypothetical, I said: *the angle*
of every figure with three sides are equal to two right angle
The Scholastics have hotly disputed *de constantia subjecti,* a
they called it, *i.e.* how the proposition made upon a subjec
can have a real truth, if this subject does not exist. The fac
is that the truth is only conditional, and says, that in case th
subject ever exists, it will be found such. But it will b
further demanded, in what is this connection founded, sinc
there is in it some reality which does not deceive. The repl
will be, that it is in the connection of ideas. But it will b
asked in reply, where would these ideas be if no mind existed
and what then would become of the real ground of this ce
tainty of the eternal truths? This leads us finally to the ult
mate ground of truths, viz.: to that Supreme and Universa
Mind, which cannot fail to exist, whose understanding, t
speak truly, is the region of eternal truths, as St. Augustin
has recognized and expresses in a sufficiently vivid way.[1] An
in order not to think that it is unnecessary to recur to thi
we must consider that these necessary truths contain the de
termining reason and the regulating principle of existence
themselves, and, in a word, the laws of the universe. Thu
these necessary truths being anterior to the existence
contingent beings, must be grounded in the existence of

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[1] Aurelius Augustinus, 354–430, grounded his philosophy in the principle
the absolute and immediate certainty of consciousness or inner experienc
Cf. De Beata Vita, chap. 7; *Solil.* II., 1 (*ante,* p. 410, note 1); *De Vera Relig.,* 3
72 *sq.*; *De Trin.,* X., 14, XIV., 7. In this certainty of the individual consciou
ness, *i.e.* in thought itself, is immediately involved the idea of God in who
exist the universal truths as the ideas or norms of all reality. *Cf. De Ideis,*
"Sunt namque ideæ principales formæ quædam, vel rationes rerum stabiles
incommutabiles, quæ ipsæ formatæ non sunt atque per hoc æternæ ac semp
eodem modo se habentes, quæ in divina intelligentia continentur, et qu
ipsæ neque oriantur neque intereant, secundum eas tamen formari dicit
omne, quod interire potest et omne, quod oritur et interit."

For a good account of Augustine's philosophy, *cf.* Ueberweg-Heinze, 7
ed., Berlin, 1888, 2, 97–115, especially 106–7, Eng. trans. from 4th Germ. ed
New York, 1871, 1, 333 *sq.,* especially 339–40; Windelband, *Hist. of Philo*
trans. by Tufts, 276 *sq.* Augustine's works form Vols. 32–47 of the Lat
Fathers in Migne, *Patrol. cur. compl.,* Paris, 1835 *sq.;* Eng. trans. by Dod
15 vols., Edinburgh, 1871–77, and in Schaff's lib. *Nicene and Post-Nice*
Fathers, Vols. 1–8, Buffalo, 1886–88. — Tr.

cessary substance. Here it is that I find the original of the eas and truths which are graven in our souls, not in the rm of propositions, but as the sources out of which applica- on and occasion will cause actual judgments to arise.[1]

CHAPTER XII

OF THE IMPROVEMENT OF OUR KNOWLEDGE

§ 1. *Ph.* We have spoken of the kinds of knowledge we ive. Now let us come to the means of improving the knowl- lge or of finding the truth. It is the received opinion among holars, that the maxims are the bases of all knowledge, and iat each particular science is based upon certain things ready known (*præcognita*). § 2. I admit that mathematics em to favor this method by their good success, and you have ven considerable support to this view. But it is still doubtful hether it is not rather the ideas which were of service therein irough their connection than two or three general maxims hich were posited at the beginning. A young lad knows iat his body is greater than his little finger, but not by vir- ie of this axiom, that the whole is greater than its part. nowledge commenced by particular propositions; but after- ards it was desired to relieve the *memory* by means of gen- ral notions from a cumbersome *load of particular ideas.* If nguage were so imperfect that there were no relative terms, *hole* and *part*, could he not know that his body is larger than is little finger? I at least give you the reasons of my author, lthough I think I foresee what you will say thereto in con- ormity with what you have already said.

Th. I know not why you bear the maxims such ill will as o attack them yet again; if they serve to relieve the memory *f a multitude of particular ideas*, as you admit, they must be ery useful, although they had no other use. But I add that they do not spring from particular ideas, for they are n found by induction from examples. He who knows that te is more than nine, that the body is larger than the finger, an that the house is too large to be able to run away with th door, knows each one of these particular propositions, by on and the same general reason which is, as it were, incorporated therein and illuminated, just as we see designs adorne with colors in which the proportion and configuration consists properly in the outlines, whatever the color may be Now this common reason is the axiom itself which is known so to speak, implicitly, although it does not exist at first in a abstract and separate manner. The examples derive thei truth from the incorporated axiom, and the axiom has not it ground in the examples. And as this common reason of thes particular truths exists in the minds of all men, you see clearl that it is not necessary that the words *whole* and *part* be foun in the language of him who is imbued therewith.

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[1] For Leibnitz God is the source of all truths as well as of all beings. The lea of God contains in itself potentially all truth, and is the regulative (but ot in the Kantian sense of the term), or better, the constitutive, principle f all thought, just as his actuality contains potentially within itself all exist- nces, and is the regulative, *i.e.*, constitutive, principle of all being. *Cf.* also, *nte*, p. 496, note 1.—Tr.

§ 4. *Ph.* But is it not dangerous to authorize assumption under the pretext of axioms? One will assume, with some o the ancients, that all is matter; another, with Polemo,[1] tha the world is God; a third will assert that the sun is the principal divinity. Judge what a religion we should have, if tha were allowed. So true is it that it is dangerous to receiv principles without questioning them, especially if they concern morality. For some one will expect another life, lik that of Aristippus,[2] who placed happiness in the pleasures o the body, rather than like that of Antisthenes,[3] who main

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[1] Polemo, the successor of Xenocrates, 396–314 B.C., as scholarch, or head 314–270 B.C., of the school of the Old Academy, and the third in that offic from Plato (Speusippus holding it from Plato's death in 347 to 339, and Xenocrates from 339–314), devoted himself chiefly to ethics. The statement that h declared the universe to be God — Πολέμον τὸν κόσμον θεὸν ἀπεφήνατο — rests o the authority of Stobæus, *Eclogæ phys.*, Bk. I., chap. 2, 5, § 62, p. 15, ed. A Meineke, Leipzig, 1855–64. For his philosophy, *cf.* Zeller, *Philos. d. Griech.* II., 1 [Vol. 3], 993–4, 1045–6, 4th ed., Leipzig, 1889. — Tr.

[2] Aristippus, c. 435–c. 366 B.C., the founder of the Cyrenaic school, mad pleasure, which, according to Diog. Laertius, II., 85, 86, he defined as th feeling of a gentle motion — τέλος δ' ἀπέφαινε τὴν λείαν κίνησιν εἰς αἴσθησιν ἀναδιδομένην . . . τὴν μὲν λείαν κίνησιν τὴν ἡδονὴν — the end of life, the wise man aimin to enjoy pleasure without being controlled by it. For his writings, *cf.* Mullach, *Fragt. philos. Gr.*, II., 397 *sq.* On his life and philosophy, *cf.* Zeller *Philos. d. Griech.*, II., 1 [Vol. 3], 336 *sq.*, ethical doctrine, 352 *sq.* — Tr.

[3] Antisthenes, c. 440–c. 369 B.C., a pupil of Gorgias and Socrates, was th founder of the Cynic school, and taught, according to Diog. Laertius, VI., 11

ned that virtue suffices to produce happiness. And Arche-
s,[1] who will lay it down as a principle that justice and
ustice, honesty and dishonesty, are defined only by the laws
l not by nature, will no doubt have other measures of moral
od and evil than those who admit obligations anterior to
man constitutions. § 5. It must be, then, that principles are
tain. § 6. But this certainty comes only from the com-
rison of ideas: thus we have no need of other principles,
l according to this rule alone we shall advance much farther
n by putting our minds at the disposal of another.

Th. I am astonished, sir, that you turn against maxims, *i.e.*
inst evident principles, that which can and must be said
inst principles assumed *gratis*. When one demands *præ-
mita* in the sciences, or anterior knowledge, which serves
ground science, he demands *known principles* and not arbi-
ry positions, whose truth is not known; and even Aristotle
derstands that the inferior and subaltern borrow their prin-
les from other superior sciences in which they have been
monstrated, except the first of the sciences, which we call
etaphysics, which, according to him, asks nothing from the
ers, and furnishes them the principles they need; and
en he says: *δεῖ πιστεύειν τὸν μανθάνοντα*,[2] the apprentice must

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t virtue only is a good, and that it is sufficient for happiness — αὐτάρκη γὰρ
ἀρετὴν εἶναι πρὸς εὐδαιμονίαν. For his writings, *cf.* Mullach, *Fragt. philos.*
., II., 261 *sq.* On his life and philosophy, *cf.* Zeller, *Philos. d. Griech.*, II., 1
ol. 3], 281 *sq.*, ethical doctrine, 303 *sq.* — Tr.

[1] Archelaus, the dates of whose birth and death are unknown, was a physi-
t, and the disciple of Anaxagoras, c. 500–428 B.C., whose physical doctrine
seems to have modified in the direction of the Ionic school as represented
Anaximines, c. 588–c. 524 B.C., and Diogenes of Apollonia. Zeller says that
statement, as given by Diog. Laertius, II., 16, that he derived the distinc-
n of good and bad from custom rather than nature — τὸ δίκαιον εἶναι καὶ τὸ
χρὸν οὐ φύσει ἀλλὰ νόμῳ — appears to be due to a mistake in interpreting his
guage, and that he merely said that men at the beginning were without
stom and law, and first attained thereto in the course of time. On his
ilosophy, *cf.* Zeller, *Philos. d. Griech.*, I., 2 [Vol. 2], 1031–1038, 5th ed.,
ipzig, 1892. — Tr.

[2] *Cf.* Aristotle, *Sophist. Elench.*, chap. 2, 161, b, 1–3: διδασκαλικοὶ μὲν οἱ ἐκ
ν οἰκείων ἀρχῶν ἑκάστου μαθήματος καὶ οὐκ ἐκ τῶν τοῦ ἀποκρινομένου δοξῶν συλλογιζό-
νοι (δεῖ γὰρ πιστεύειν τὸν μανθάνοντα), *i.e.* discussions for the purpose of teach-
g proceed from the special principles of each science, and do not draw their
nclusions from the opinions of the participating pupil; Aristotle's thought
ing that the pupil will receive a confirmation of the mere faith in the prin-
les demanded of him at the outset, in the course of the explanation and
monstration of these principles in his presence, and in the agreement of the
ientific results with the facts and his further knowledge. Leibnitz here

believe his master, his thought is that he must do it only whi waiting, while he is not yet instructed in the higher science so that it is only provisionally. Thus we are very far fro receiving *gratuitous principles.* To this it must be added th even principles whose certainty is not complete may hav their use if we build upon them only by demonstration; f although all the conclusions in this case are conditional onl and are valid only upon the supposition that this principle true, nevertheless this connection itself and these condition enunciations would at least be demonstrated; so that it we much to be desired that we had many books written in th way, where there would be no danger of error, the reader disciple being warned of the condition. And practice will regulated by these conclusions only as the supposition sha be found verified elsewhere. This method also serves ver often itself to verify suppositions or hypotheses, when man conclusions arise from them, the truth of which is otherwis known, and sometimes this gives a perfect proof (*retou* sufficient to demonstrate the truth of the hypothesis. M Conring,[1] a physician by profession, but a clever man in ever kind of learning, except perhaps mathematics, wrote a lett to a friend engaged in reprinting at Helmstädt the book Viottus,[2] an esteemed Peripatetic philosopher who tried t

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expresses a similar thought, in premising the *provisional character* of th faith which the beginner should have in his teacher. — Tr.

[1] Hermann Conring, 1606–1681, one of the most learned men of his ag possessed of vast erudition, and thoroughly informed on medicine, law, th ology, history, physics, philology, etc., taught at Helmstädt, and wrote immense number of works, which have been united in part and publish under the title of *Opera omnia*, Brunswick, 1730, 7 vols., fol. For an accou of him, *cf.* Michaud, *Biog. Univ.*, Vol. 9, pp. 447–452. For his corresponden with Leibnitz, *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 1, 153–206. — Tr.

[2] Bartolommeo Viotto, or Viotti, surnamed a Clivolo, son of a disti guished surgeon, Tommaso Viotto, who was the first in the University Turin to receive the laurel crown in surgery from the Decurions of Trin was a philosopher and physician of Turin, and, in the five years precedi 1552, public professor of logic in that city. He died in 1568. He was auth of *De balneorum naturalium viribus lib. IV.*, Lugduni, 1552, reprinted in *balneis omnia quæ extant apud Græcos, Latinos, et Arabas*, fol. Venetiis, 155 pp. 247–71; and of the work here and elsewhere referred to by Leibni *Demonstrationum in methodum medendi lib. V.*, 8vo, Parisiis, 1560, and und the editorship of A. Frolingius, Helmstädt, 1661, Braunschweig, 1684. Correspondence of Leibnitz and Conring, Gerhardt, *Leibniz. philos. Schrif* 1, 184, 187; of Leibnitz and Placcius, Dutens, *Leibnit. op. om.*, 6, 45.

Conring, *Introd. in univ. art. med.*, Halæ et Lipsiæ, 1726, p. 23, says

lain the demonstration and "Posterior Analytics" of
istotle. This letter was appended to the book, and in
Conring criticised Pappus when he said that *analysis*
oposes to discover the unknown by assuming it, and by
ching therefrom, by inference, known truths;[1] a method
ich is contrary to logic (he said) which teaches that from
sehood we cannot infer truths. But I made known to him
erwards that analysis makes use of definitions and other
iprocal propositions which furnish means of making the
oof (*retour*), and of discovering synthetic demonstrations.[2]
d even when this proof is not demonstrative, as in physics,
is nevertheless sometimes highly probable, when the hy-
thesis explains easily many phenomena, difficult without
and very independent of one another. I hold to the
uth, sir, that the principle of principles is in a way the
od use of ideas and of experience; but by examining it
oroughly we shall find that, as regards ideas, it is nothing
se than the union of definitions by means of identical axi-
ns. Nevertheless, it is not always an easy thing to come to
is ultimate analysis, and whatever desire the geometers, at
ast the ancient geometers, have shown to succeed therein,
ey have not yet been able to do so. The celebrated author

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m: "Certe qui necessitatem ejus in medicina simul et ipsam artem demon-
randi post Galenum ostenderit, hactenus nemo inventus est, si excipias
aum Bartholomæum Viottum hominem longe doctissimum; cujus de demon-
ratione præclarum opus ante centum annos prodiit." *Cf.*, also, G. Pasch,
e novis inventis, 2d ed., 4to, Lipsiæ, 1700, p. 26; J. A. van der Linden, *De
riptis medicis*, 8vo, Amstelredami, 1637, p. 82, *Linden. renovat.*, 4to, Norim-
ergæ, 1686, pp. 114, 119; Kestner, *Medicinisches-Gelehrten-Lexicon*, 4to, Jena,
740, p. 897; G. G. Bonino, *Biografia medica piemontese*, 8vo, Torino, 1824,
ol. 1, pp. 199–201. — Tr.

[1] Pappus of Alexandria was a Greek geometer "of a very high order," who
ourished, according to the best recent opinion, in the reign of Diocletian,
84–305, and whose Συναγωγή, or *Collection*, is of very great value in the his-
ory of mathematics. From Bk. VII. of this work is derived a large part of
ur knowledge of Greek geometry. The best ed. of the whole work is F.
Iultsch, *Pappi Alexandrini Collectionis quæ supersunt*, 3 vols., Berlin, 1876–78.

Pappus' explanation of the nature of analysis and synthesis, which Con-
ing erroneously criticised, is found in the preface of Bk. VII. of the Συναγωγή,
f. Hultsch, *op. cit.*, Vol. 2, pp. 634–6; C. I. Gerhardt, *Der Sammlung des
appus von Alexandrien, siebentes u. achtes Buch*, Halle, 1871, pp. 2–4. Ac-
ording to Schaarschmidt, this explanation is perhaps the clearest and best
oncise statement that has been made of the nature of the analytic and syn-
hetic method. — Tr.

[2] *Cf.* Correspondence of Leibnitz and Conring, Letter of Jan. 3d, 1678,
erhardt, *Leibniz. philos. Schrift.*, 1, 187–8; also, *ibid.*, 185, 190, 193 *sq.* — Tr.

of "The Essay on Human Understanding," would give ther much pleasure if he would complete this investigation, a littl more difficult than we think. Euclid, for example, has pu among the axioms one which amounts to saying: that tw straight lines can meet only once. The image derived fro the experience of the senses, does not permit us to picture t ourselves more than one meeting of the two lines; but it i not upon this that science must be founded. And if any on believes that this image gives the connection of distinct ideas he is not sufficiently instructed concerning the source of truths and a multitude of propositions, demonstrable by others anterior, would pass with him as immediate. Many of those wh have criticised Euclid, have not sufficiently considered this these kinds of images are only confused ideas, and he wh knows the straight lines only by this means will not be capabl of demonstrating anything. Euclid, therefore, for want of distinctly expressed idea, *i.e.* a definition of a straight line (fo that which he gives meanwhile is obscure and of no use to hi in his demonstrations), was obliged to return to two axiom which for him took the place of definitions and which he employed in his demonstrations: the one that two straight line have no common part, the other that they enclose no space Archimedes has given a kind of definition of the *straight line* in saying that it is the shortest line between two points. Bu he tacitly assumes (by employing in his demonstrations elements like those of Euclid, based upon the two axioms I hav just mentioned) that the properties (*affections*) of which thes axioms speak, accord with the line which he defines.[1] Thus i you believe, with your friends, under the pretext of the agreement or disagreement of ideas, that what these images tell u was allowed and is still to be received in geometry, withou seeking that strictness of demonstration by means of definitions and axioms which the ancients demanded in this scienc (as I believe many people will believe for lack of information), I will admit, sir, that you may be contented as regards thos who trouble themselves only about practical geometry suc as it is, but not as regards those who desire to have the scienc which serves indeed to perfect the practical. And if the ancients had been of this opinion and had relaxed their efforts this point, I think they would have made but little advance, d would have left us only an empirical geometry such as at of the Egyptians apparently was, and such as that of the inese seems still to be; this would have deprived us of the ost worthful physical and mechanical knowledge which ometry has caused us to discover, and which is unknown erever our geometry is unknown. It is also apparent at in following the senses and their images we should fall o errors; much the same as we see that all those who are t instructed in exact geometry receive as an indubitable truth on trust in their imagination, that two lines continually proaching each other, must finally meet; while geometers ve contrary instances in the case of certain lines called ymptotes. But besides this we should be deprived of what value most highly in geometry as related to reflection, viz.: rmitting us to catch a glimpse of the true source of eternal uths and of the means of making us comprehend their neces-y, a matter which the confused ideas of the sense-images uld not show us distinctly. You will say to me that Euclid as obliged, however, to confine himself to certain axioms hose evidence is seen only confusedly by means of the ages. I agree with you that he has limited himself to these ioms, but it was better for him to limit himself to a small umber of truths of this nature which appeared to him the mplest and to deduce from them the others which another ss exact would also have taken as certain without demonstra-on, than to leave many of them undemonstrated, and what is orse, to allow people the liberty of extending their laxity cording to their fancy. You see then, sir, that what you d your friends have said regarding the connection of ideas the true source of truths needs explication. If you are illing to content yourself with the confused sight of this nnection, you weaken the exactness of demonstrations, and uclid has done incomparably better in reducing all to defini-ons and to a small number of axioms. Yet if you wish this nnection of ideas to be distinctly seen and expressed, you ill be obliged to recur to definitions and identical axioms, I claim; and sometimes you will be obliged to content ourself with some axioms less primitive, as Euclid and rchimedes have done, when you find difficulty in attaining a perfect analysis, and you will do better in that way than t neglect or defer some fortunate discoveries which you ca already make by their means: as in fact I have already sai to you at another time, sir, that I believe we should not hav a geometry (I mean a demonstrative science), if the ancien had not been willing to advance until they had demonstrate the axioms they were obliged to employ.

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[1] Gerhardt and Erdmann read "définit"; Jacques "décrit." — Tr.

§ 7. *Ph.* I begin to understand what a distinctly known co nection of ideas is, and I see clearly that in this sense axiom are necessary. I see clearly also how necessary it is that th method we follow in our researches, when the question is tha of the examination of ideas, be regulated by the example o the mathematicians who from certain very clear and eas beginnings (which are nothing else than the axioms and def nitions) proceed by small degrees and a continual chain o reasoning to the discovery and demonstration of truths tha appear at first beyond human capacity. The art of findin proofs, and these admirable methods they have invented fo separating and putting in order mediate ideas is what ha produced such wonderful and unexpected discoveries. Bu whether with time a similar method may not be found ou useful in respect to other ideas as well as those belonging t magnitude is a question I will not determine. At least, other ideas were examined according to the ordinary metho of the mathematicians, they would lead our thoughts farthe than we are perhaps led to imagine. § 8. And this might b done particularly in the case of morality, as I have more tha once said.

Th. I believe you are right, sir, and I have been dispose for a long time to make it my business to accomplish you predictions.

§ 9. *Ph.* In regard to the knowledge of bodies we are com pelled to take a directly contrary path; for having no idea of their real essences, we are obliged to recur to experienc § 10. But I do not deny that a man accustomed to makin rational and regular experiments is capable of forming juste conjectures regarding their still unknown properties tha another not so accustomed, but it is judgment and opinion, no knowledge and certainty. This makes me think that physi is incapable of becoming a science in our hands. But exper nts and historical observations may be of use to us as ;ards the health of our bodies and the conveniences of life.

Th. I admit that physics as a whole will never be a per- :t science among us, but we shall not cease to be able to ve some physical science, and indeed we have already some ecimens of it. For example, magnetology may pass for :h a science, for, making a few suppositions based upon perience, we can demonstrate from them by a certain infer- ce a number of phenomena which really occur as we see that ason declares. We ought not to hope to give a reason for experiments, as indeed the geometers have not yet proved their axioms; but just as they are satisfied to deduce a ge number of theorems from a small number of principles the reason, so is it sufficient that the physicists by means certain principles of experience give a reason for a multi- le of phenomena and can indeed prove them in practice.

§ 11. *Ph.* Since then our faculties are not fitted to make us scern the internal fabric of bodies, we must consider that it enough that they discover to us the existence of God, and a fficiently extended knowledge of ourselves to instruct us in r duties and in our greatest interests, particularly as related eternity. And I think I am right in inferring therefrom at *morality is the proper science and the important business of ankind in general, as, on the other hand, the different arts which e conversant about different parts of nature are the lot of par- ular men.* It may be said, for example, that ignorance of e use of iron is a reason in the countries of America, where ture has spread abroad abundantly all kinds of goods, for the :k of the greatest part of the conveniences of life. Thus ry far from despising the science of nature, § 12. I hold, at if this study is directed, as it ought to be, it may be of eater use to the human race than all that has been done up this time; and he who invented printing, who discovered e use of the compass, and who made known the virtue of inquina, has contributed more to the propagation of knowl- ge and to the advancement of the useful conveniences of e, and has saved more people from the grave, than the unders of colleges and hospitals and other monuments of e most exemplary charity, which have been built at great pense.

Th. You could say nothing, sir, more to my liking. Tru
morality or piety, very far from favoring the inactivity of ce
tain idle quietists, must impel us to cultivate the arts. A
as I said not long since, a better police would be able to brin
us some day a much better medical science than that we hav
at present. We cannot preach this doctrine enough, next t
the care for virtue.

§ 13. *Ph.* Although I recommend experiments, I do n
despise probable hypotheses. They may lead us to new di
coveries, and are, at least, a great aid to the memory. Bu
our mind has a great tendency to go too fast and to be sati
fied with certain superficial appearances, for lack of takin
the necessary time and trouble to apply them to a multitud
of phenomena.

Th. The art of discovering the causes of phenomena,
true hypotheses, is like the art of deciphering, in which a
ingenious conjecture often greatly shortens the road. Lor
Bacon began to put the art of experimenting into precept
and Chevalier Boyle[1] had a great talent for practising i
But if the art of employing experiments and of drawing co
sequences therefrom is not joined with it, we shall neve
with the utmost cost attain to what a man of great penetratio
might discover at first sight. Descartes, assuredly such a ma
has made a similar remark in one of his letters[2] regarding th
method of the Chancellor of England; and Spinoza (whom
do not hesitate to quote when he says a good thing) in one
his letters[3] to the late Mr. Oldenburg, Secretary of the Roya
Society of England, printed among the posthumous works
this subtle Jew, makes a similar reflection upon a work
Boyle, who, to speak the truth, stops a little too much t
draw from a great number of fine experiments no other co

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[1] *Cf. ante*, p. 324, note 2. — Tr.

[2] The remark here referred to by Leibnitz as occurring in one of Descarte
letters has not as yet been found in any of those now extant; and, as menti
is made of Bacon in Spinoza's remark cited immediately after, it is possib
that Leibnitz confounded the two authors, a thing which might readily happe
especially as Leibnitz was often out of the reach of books when composi
his works, as probably in this case, *cf. ante*, p. 8, note 1. — Tr.

[3] *Cf.* Spinoza, *Opera*, ed. Van Vloten and Land, 2, 19: "Sed interim nesc
cur clarissimus vir hoc" (*i.e.* universal mechanism) "adeo sollicite conet
colligere ex hoc suo experimento; cum jam hoc a Verulamio, et postea
Cartesio satis superque demonstratum sit." — Tr.

sion than this which he might take as a principle, viz.: that erything in nature takes place mechanically, a principle ich can be rendered certain by reason alone, and never by periments, whatever their number.

§ 14. *Ph.* After having established clear and distinct ideas th fixed names, the great means of extending our knowlge is the art of finding mediate ideas which can show us the nection or incompatibility of the extreme ideas. The maxs at least are of no avail in furnishing them. Suppose a n has not an exact idea of a right angle, he will vainly tornt himself in demonstrating something about the rightgled triangle: and whatever maxims he employs, he will have ficulty in attaining by their aid the proof that the first ares of the sides enclosing the right angle are equal to the uare on the hypothenuse. A man might ruminate upon se axioms a long time without ever seeing more clearly o mathematics.

Th. It is of no avail to ruminate upon the axioms without ving something to which to apply them. Axioms often ve to connect ideas, as, for example, this maxim, that similar tensions of the second and third dimensions are in reason uble and triple the corresponding extensions of the first nension, is of very great use; and the quadrature, for expple, of the lune of Hippocrates[1] springs from it at once in case of the circles by uniting therewith the application of se two figures the one to the other, when their given posin furnishes the opportunity for so doing, as their known nparison promises light thereupon.

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[1] Hippocrates of Chios, c. 440 B.C., a contemporary of Hippocrates of Cos, physician (*cf. ante*, p. 476, note 2), was a celebrated Greek geometer, whose st noted achievement was the discovery of the quadrature of the lune, or crescent-shaped plane figure produced by drawing two perpendicular radii circle and describing upon the line joining their extremities a semicircle. s lune is famous as the first curvilinear space whose area was exactly denined, and its area is exactly equal to that of the triangle formed by the two ii and the line joining their extremities. For the demonstration of this, Larousse, *Grande Dict. Univ. de XIX^e Siecle*, Vol. 10, p. 791, a, b. On pocrates and his services to mathematics, *cf.* Allman, *Greek Geom. n Thales to Euclid*, 64 *sq.*; Gow, *A Short Hist. of Greek Math.*, 164 *sq.*; Suter, *Gesch. d. math. Wissenschaften*, 2d ed., Vol. 1, pp. 33–36, Zürich, 3. — Tr.

CHAPTER XIII

OTHER CONSIDERATIONS CONCERNING OUR KNOWLEDGE

§ 1. *Ph.* It will be perhaps further appropriate to add, tha our *knowledge* has a close relation to our sight in this, as wel as in other things, that it is neither wholly *necessary* nor wholl *voluntary.* We cannot fail to see when our eyes are open t the light, but we can turn them towards certain objects, § 2 and consider them with more or less application. Thus whe the faculty is once applied, it does not depend upon the wi to determine the knowledge; no more than a man can preve himself from seeing what he sees. But he must employ hi faculties, as it is necessary in order to inform himself.

Th. We have spoken before of this point, and establishe the fact that it does not depend upon man to have this or tha opinion in the present state, but it depends upon him to pr pare himself to have it or not to have it eventually, and tha thus opinions are voluntary only in an indirect manner.

CHAPTER XIV

OF JUDGMENT

§ 1. *Ph.* Man would be found without direction in th greater part of the arts of his life, if he had nothing to co duct him from the point where certain knowledge fails hi § 2. He must often be contented with a simple *twilight of pro ability.* § 3. The faculty of using this is *judgment.* One contented with it often of necessity, but often through wa of diligence, patience, and skill. § 4. It is called *assent dissent,* and is employed when anything is *presumed, i.e.* wh it is *taken* as true *before* it is proved. When this is done co formably to the reality of things, it is a *right judgment.*

Th. Others call *judgment* the act which is performed eve time a statement is made after some knowledge of a caus and there will be some also who will distinguish judgme m opinion, as not of necessity being so uncertain. But I not wish to criticise any one regarding the use of words, l it is allowed you, sir, to take judgment as a probable inion. As for *presumption*, which is a term of the juris- nsults, good use with them distinguishes it from *conjecture.* is something more, something which must pass for truth ovisionally until there is proof of the contrary, while a n, a *conjecture*, must often be weighed against another con- ture. Thus it is that he who admits having borrowed ney from another, is *presumed* to pay the debt, unless he ows that he had done so already, or that the debt ceases by ne other principle. *Presumption* is not then in this sense *ing before* proof, which is not allowed, but *taking in advance* t with foundation, while awaiting a contrary proof.

CHAPTER XV

OF PROBABILITY

§ 1. *Ph.* If *demonstration* shows the connection of ideas, *obability* is nothing else than the appearance of this connec- on based upon proofs in which immutable connection is not en. § 2. There are several degrees of assent from *assurance* own to *conjecture, doubt, distrust.* § 3. When there is *cer- inty*, there is intuition in all parts of the reasoning which ow its connection; but what makes me *believe* is some- ing *extraneous.* § 4. Now probability is grounded in its nformity with what we know, or in the testimony of those ho know.

Th. I prefer to maintain that it is always grounded in like- hood (*vraisemblance*) or in conformity with the truth; and e testimony of another is also a thing which the truth has en wont to have for itself as regards the facts that are ithin reach. It may be said then that the similarity of the obable and the truth is taken either from the thing itself, from some extraneous thing. The rhetoricians employ two inds of *arguments:* the *artificial*, drawn from things by rea- ning, and the *non-artificial*, based only upon the express stimony either of man or perhaps also of the thing itself.

But there are *mixed* arguments also, for testimony may itsel furnish a fact which serves to form an artificial argument.

§ 5. *Ph.* It is for lack of similarity to truth that we do no readily believe that which has nothing like that which w know. Thus when an ambassador told the king of Siam tha with us the water was so hardened in winter that an elephan might walk thereon without breaking through, the king sai to him: Hitherto I have believed you as a man of good faith now I see that you lie. § 6. But if the *testimony* of others ca render a fact probable, the *opinion* of others should not pas of itself as a true ground of probability. For there is mor error than knowledge among men, and if the belief of thos whom we know and esteem is a legitimate ground of assent men have reason to be Heathen in Japan, Mahometans i Turkey, Papists in Spain, Calvinists in Holland, and Luther ans in Sweden.

Th. The testimony of men is no doubt of more weight tha their opinion, and in reason it is also the result of mor reflection. But you know that the judge sometimes make them take the oath *de credulitate*, as it is called; that in th *examinations*, we often ask witnesses not only what they hav seen but also what they think, demanding of them at th same time the reasons of their judgment, and whether the have reflected thereupon to such an extent as behooves them Judges also defer much to the views and opinions of ex perts in each profession; private individuals, in proportio as it is inconvenient for them to present themselves at th appropriate examination, are not less compelled to do this Thus a child, or other human being whose condition is bu little better in this respect, is obliged, whenever he finds him self in a certain situation, to follow the religion of the coun try, so long as he sees nothing bad therein, and so long as h is not in a condition to find out whether there is a better. tutor of pages, whatever his sect, will compel them each t go to the church where those who profess the same belief a this young man go. The discussions between Nicole[1] an others on *the argument from the great number* in a matter c ith may be consulted, in which sometimes one defers to it ɔ much and another does not consider it enough. There are her similar *prejudgments* by which men would very easily empt themselves from discussion. These are what Tertul- ın, in a special treatise, calls *Prescriptiones,*[1] availing him- lf of a term which the ancient jurisconsults (whose lan- ıage was not unknown to him) intended for many kinds of ceptions or foreign and predisposing allegations, but which ɔw means merely the temporal prescription when it is in- nded to repel the demand of another because not made with- the time fixed by law. Thus there was reason for mak- g known the *legitimate prejudgments* both on the side of the oman Church and on that of the Protestants. It has been und that there are means of opposing novelty, for example, ı the part of both in certain respects; as, for example, when e Protestants for the most part abandoned the ancient form ordination of clergymen, and the Romanists changed the ıcient canon of the Old Testament books of Holy Scripture, I have clearly enough shown in a discussion I had in riting, and from time to time, with the bishop of Meaux, hom we have just lost, according to the news which came ɔme days since.[2] Thus these censures being mutual, the ɔvelty, although it presents a suspicion of error in these atters, is not a certain proof thereof.

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[1] Pierre Nicole, 1625–1695, one of the most distinguished of the Port-Roya ists, and, with the exception of Arnauld (*cf. ante*, p. 463, note 4) and Pascal, tl most accomplished member of the school, was author with Arnauld of the f

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ous *L'Art de Penser* or the Port Royal Logic. His most important work is s *Essais de Morale*, Paris, 1671–74. It was about his *De l'unité de l'église ou futation du nouveau système de Jurien*, Paris, 1687, that the theological ɔntroversies here alluded to by Leibnitz centred, and "in which the question as considered, whether Roman Catholicism allows itself to engage in the — ıdoubtedly questionable — argument of the 'majority of professors.'" An count of Nicole's *De l'unité de l'église* will be found in Bayle's Dict., Eng. ansl., Vol. 4, p. 363, London, 1737. — Tr.

[1] Tertullian, 150–160 — 220–240, sought in his *De Præscriptione Hæreticorum* produce a formal general argument against all heresies — "adversus hære- s omnes" — his object being to prevent heretics, in accordance with certain ıst and necessary rules (*præscriptiones*), from appealing to Scripture in sup- ɔrt of their views. For an account of the work, *cf.* Smith and Wace, *Dict. Christ. Biog.*, Vol. 4, p. 837 a, *sq.* — Tr.

[2] Leibnitz here refers to his correspondence with Jacques Bénigne Bossuet, 27–1704, Bishop of Meaux from 1681 till his death. This correspondence was enic in character, and extended, with some interruptions, over a period of ɔout 25 years, but was without result, because Leibnitz would not suffer the eedom of scientific inquiry to be taken away, while Bossuet desired sub- ction to the infallible authority of the church. The entire correspondence as been published by Foucher de Careil, *Œuvres de Leibniz*, Vols. 1, 2,

CHAPTER XVI

OF THE DEGREES OF ASSENT

§ 1. *Ph.* As for the *degrees of assent*, we must take car that the grounds of probability we have do not operate beyon the degree of *likelihood* found therein or which has been foun therein when they are examined. For we must admit tha assent cannot always be based upon an actual view of the rea sons which have prevailed with the mind, and it would b very difficult even for those[1] who have an admirable memor

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Paris, 1859–60. A portion of the same is found in Dutens, *Leibnit. op. om.*, 507 *sq.* The letters especially referred to are (1) of Leibnitz: Dec. 11, 169 (Foucher de Careil, *Œuvres de Leibniz*, 2, 274–277; Dutens, *Leibnit. op. om.*, 594–596), May 14 and 24, 1700 (F. 2, 314–369; D. 1, 612–642); (2) of Bossuet: Ja 9 and 30, 1700 (F. 2, 278–306; D. 1, 596–611), Aug. 17, 1701 (F. 2, 396–426; D. 657–673). For an account of the controversy, *cf.* Pichler, *Die Theologie d Leibniz*, Vol. 2, pp. 206–215.

The present passage is important, as it enables us to determine the date the composition of the *New Essays*, or at least of this portion of them. Bo suet died April 12, 1704. This passage must then have been written in t second half of April, 1704; and from other data (for which *cf.* Guhraue *Leibniz. Eine Biographie*, Bk. II., p. 282 and Anmerkungen z. zweiten Buch pp. 38–39; and Gerhardt's Introduction to the *New Essays*, *ante*, pp. 8, 9, an notes) it is evident that the entire work was substantially completed in 170 though the revision of the French style, and possibly some minor additions alterations, occupied Leibnitz to a certain extent after this date.

In this connection it is to be noted that the date given, *ante*, p. 9, line 1 1709, should be 1704 (*cf.* Gerhardt, *Leibniz. philos. Schrift.*, 3, 297, note *), an that Gerhardt's remark, *ante*, p. 9: "On the other hand, he remarks, wel nigh it seems in the opposite sense," etc., as well as that by the Translato *ante*, p. 101, note 1, *prope. fin.*: "As Leibnitz was occupied . . . with the con position and revision of his *New Essays*, from 1700 . . . to 1709 and perha later . . . possibly even as late as 1714 or 1716," should be modified accor ingly. — Tr.

[1] Gerhardt's text reads: "Sur une veue actuelle des raisons, *qui ont preval sur l'esprit, et il seroit très difficile, même à ceux*, qui ont une memoire a mirable," etc. The words italicised above are not found in the texts of Rasp Erdmann, Jacques and Janet; and Janet restores the sense of "this incorre phrase" thus: " . . . Sur une vue actuelle des raisons, *comme il arrive* ch ceux qui ont une mémoire admirable, *capable* de toujours retenir. . . . Gerhardt's reading agrees with Locke's text, *cf.* *Philos. Wks.*, Vol. 2, p. 27 Bohn's ed., and is therefore to be preferred. — Tr.

ways to retain all the proofs which have compelled them to certain assent, and which sometimes might fill a volume on a ngle question. It suffices that they have once examined the atter minutely with sincerity and with care, and that they ave, so to speak, *cast up the account*. § 2. Without this men ust be very sceptical, or change their view at every moment, order to yield themselves to every man who, having examed the question of late, offers them arguments which they nnot at once wholly answer, for lack of memory or of applition at leisure. § 3. It must be admitted that this often akes men *obstinate* in error: but the fault is, not that they ly upon their memory, but that they have badly judged bere. For often the remark that they have never thought therwise takes the place of an examination and of reason ith men. But ordinarily those who have least examined eir opinions hold them most tenaciously. Holding to what ne has *seen* is praiseworthy, but not always to what one has *elieved*, because some consideration may have been left behind apable of overturning all. There is perhaps no one in the orld who has the leisure, patience, and means of assembling ll the proofs on both sides of the question upon which he as his opinions in order to compare these proofs and safely o conclude that nothing more remains for him to know for his ore ample instruction. But the care of our life and of our ore important interests cannot bear the delay, and it is absotely necessary that our judgment be determined upon the oints when we are incapable of attaining to a certain knowldge.

Th. There is nothing but what is good and solid in what ou, sir, have just said. It would be desirable, however, for en to have at certain junctures *written abstracts* (in form of emoranda) *of the reasons* which have led them to an imporant opinion, which they are obliged often to justify afterards to themselves or others. Besides, although in a matter f justice it is not usually allowable to retract the judgments hich have been passed, and to revise the verdicts agreed pon (otherwise there would necessarily be perpetual unrest, hich would be so much the more intolerable as the accounts f things past cannot always be preserved), yet one is someimes allowed upon new light to sue for justice, and also to obtain what is called *restitutio in integrum*[1] contrary to the decision that has been given. And likewise in our own affairs, especially in matters very important, where it is still allowable to embark or to put back, and where it is not prejudicial to suspend their execution and to proceed bridle in hand, the decisions of our minds based upon probabilities should never so pass *in rem judicatam*,[2] as the jurisconsults call it, *i.e.* to a settlement, that we may not be disposed to the *revision* of the reasoning when new counter reasons of weight present themselves. But when there is no more time for deliberation, we must follow the judgment we made with as much firmness as if it were infallible, but not always with so much strictness.[3]

§ 4. *Ph.* Since, then, men cannot avoid exposing themselves to error in judgment and having different opinions, since they cannot look at things from the same points of view, they must maintain peace between themselves and the duties of humanity amid this diversity of opinions without claiming that another should promptly change a rooted opinion upon our objections, especially if there is room for supposing that his adversary acts from interest or ambition or from some other private motive. Most frequently those who would impose upon others the necessity of yielding to their opinions have examined things with but little thoroughness. For those who have entered beforehand sufficiently into the discussion to extricate themselves from doubt are so few in number, and find so little reason to condemn others, that nothing violent is to be expected on their part.

Th. Really that which one has the most right to censure in men is not their opinion, but their rash judgment in censuring ıat of others, as if it were necessary to be stupid or wicked) judge differently from themselves; a condition of things ·hich, in the authors of these passions and hatreds who spread ıem among the public, is the effect of a mind haughty and nfair, which loves to rule and cannot suffer contradiction. ot that there is not, in truth, reason very often for censuring ıe opinions of others, but it must be done in a spirit of fair-ess, and sympathy with human weakness. It is true that ·e are right in taking precautions against bad doctrines, ·hich are influential upon manners and upon practical piety: ut we must not attribute them to people to their prejudice ·ithout having good proofs of the same. If fairness wishes) spare persons, piety demands the representation, where it is tting, of the bad effects of their dogmas when they are in-ırious, as those are which are contrary to the providence of a erfectly wise, good, and just God, and contrary to that nmortality of souls which renders them susceptible of the ffects of his justice, not to speak of other opinions dangerous s regards morality and the police. I know that excellent and ·ell-meaning men maintain that these theoretic opinions ave less influence upon practice than is thought, and I also now that there are persons of an excellent disposition whom ıese opinions will never make do anything unworthy of ıemselves: as also those who have reached these errors by peculation, are by nature wont to be farther removed from ıe vices to which men in general are susceptible, besides the ıct that they are careful of the dignity of the sect in which ıey are, as it were, chiefs; and it may be said that Epicurus nd Spinoza, for example, have led a life wholly exemplary. ·ut these reasons cease most frequently in their disciples or nitators, who, believing themselves released from the trouble-ome fear of an overseeing Providence and of a menacing ıture, give loose reins to their brutish passions, and turn ıeir mind to the seduction and corruption of others; and if ıey are ambitious and of a disposition somewhat harsh, they ·ill be capable, for their pleasure or advancement, of setting n fire the four corners of the earth, as I have known from the haracter of some whom death has swept away. I find also ıat similar opinions insinuating themselves little by little ıto the minds of men of high life who rule others and upon whom affairs depend, and slipping into the books in fashion, dispose all things to the general revolution with which Europe is threatened, and accomplish the destruction of what still remains in the world of the generous sentiments of the ancient Greeks and Romans, who preferred love of country and of the public good, and regard for posterity to fortune, and even to life. These *public spirits,* as the English call them, are fast diminishing, and are no longer in fashion; and they will diminish still faster when they are no longer sustained by the good morality and true religion which even natural reason teaches us. The best of the opposite character who are beginning to rule have no other *principle* than that they call *honor.* But the mark of the honest man and of the man of honor with them is only to do no baseness as they understand it. And if for the sake of power or through caprice anyone poured forth a deluge of blood, if he turned every sense upside down, that would be counted as nothing, and a Herostratus[1] of the ancients or a Don Juan in the "Festin de Pierre"[2] would pass for a hero. Boldly they scoff at the love of country, they ridicule those who care for the public, and when any well-meaning man speaks of what will become of posterity, they reply: we shall see when the time comes. But these persons will possibly experience themselves the evils they think reserved for others. If, however, this disease of an epidemic mind whose bad effects begin to be visible is corrected, these evils will perhaps be prevented; but if it goes on increasing, Providence will correct men by the revolution itself which must spring therefrom: for whatever may happen, everything will always turn out for the better in general at the end of the account, although that ought not and cannot happen without the punishment of those who have contributed even to the good by their bad acts. But I return from a digression into which the consideration of truthful opinions and of the right of censuring them has led me.

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[1] *Cf.* Paulus, *Sententiarum*, Lib. I., Tit. VII. 1.: "Integri restitutio est redintegrandæ rei vel causæ actio. 2. Integri restitutionem prætor tribuit ex his causis, quæ per metum, dolum et status permutationem, et justum errorem et absentiam necessariam, et infirmitatem aetatis gesta esse dicuntur;" also *Digest*, Lib. XLII., Tit. I. 33.

[2] *Cf. Digest*, Lib. XLII., Tit. I. 1: "*Res judicata* dicitur, quæ finem controversiam pronunciatione judicis accipit: quod vel condemnatione vel absolutione contingit." — Tr.

[3] Janet cites as a parallel passage Descartes, *Discours de la Méthode*, Pt III.: "Ma seconde maxime était d'être le plus ferme et le plus résolu en me actions que je pourrais, et de ne suivre pas moins constamment les opinion les plus douteuses lorsque je m'y serais une fois déterminé que si elles eussen éte très-assurées." — Tr.

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[1] Herostratus, an Ephesian, who, for the sake of making his name famous as he himself confessed on being put to torture, set fire to the temple of Artemis at Ephesus, on the night in which Alexander the Great was born 356 B.C. — TR.

[2] The *Don Juan ou le Festin de Pierre*, 1665, a comedy of Molière, 1622-1673, the principal character of which is Don Juan. The play, written in prose, was versified in 1677, at the request of Molière's widow, by Thomas Corneille, 1625-1709. — TR.

ow as in theology *censures* go very much farther than elsehere, and as those who lay great stress upon their orthodoxy, ften condemn their adversaries, to whom those in the same arty who are called *syncretists* by their adversaries are pposed, this opinion has caused civil wars to spring up etween the rigid and condescending in one and the same arty. But, as to refuse eternal salvation to those who are of nother opinion is to encroach upon the rights of God, the isest of those who condemn, only indicate the peril in which hey think they see erring souls, and leave to the peculiar ercy of God those whose wickedness does not render them ncapable of profiting therefrom, and on their part believe hemselves obliged to make all imaginable efforts to withdraw hem from a condition so dangerous. If these persons who hus judge of the perils of others have come to this opinion fter a suitable examination and there are no means of disbusing them of it, their conduct cannot be censured so long s they use only fair means. But as soon as they go farther, hey violate the laws of equity. For they should consider hat others persuaded like themselves have an equal right to naintain their views, and even to spread them if they think hem important. Opinions must be excepted which teach rimes that should not be allowed, and which it is right to uppress by stringent means, if it should be true, indeed, that e who maintains them cannot be rid of them;[1] as it is right o destroy even a poisonous animal, wholly innocent as it is. But I speak of suppressing the sect and not men, since we an prevent them from doing harm and dogmatising.

§ 5. *Ph.* To return to the ground and degrees of assent, it s proper to remark that propositions are of two kinds. Some re of fact, and, depending upon observation, may be based upon human testimony; others are speculative, and, regarding things which our senses could not discover, are incapable of similar testimony. § 6. When a particular fact is in conformity with our constant observations, and with the uniform report of others, we rest upon it as firmly as if it were certain knowledge, and where it is in conformity with the testimony of all men, in all ages, so far as can be known, it is the *first* and highest degree of probability; for example, that fire warms, that iron sinks to the bottom of the water. Our *belief* built *upon* such foundations rises to *assurance*. § 7. In the second place, all historians relate that such an one has preferred his individual interest to that of the public, and as it has always been observed that this is the custom of the majority of men, the assent I give to these histories is *confidence*. § 8. Thirdly, when there is nothing either for or against it in the nature of things, a fact, vouched for by the testimony of unsuspected people, for example, that Julius Cæsar lived, is received with a *firm belief*. § 9. But when the testimony is found contrary to the ordinary course of nature or the witnesses vary among themselves, the degrees of probability may vary infinitely, whence arise these degrees which we call *belief, conjecture, doubt, uncertainty, distrust;* and there it is that exactness is necessary to form a right judgment and to proportion our assent to the degrees of probability.

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[1] Gerhardt reads: "ne peut point s'en defaire." Erdmann, Jacques and Janet read: "ne peut point s'en faire," and Janet in his note says: "supply 'd'autres.'" With this reading the meaning is: "cannot procure for himself others." — Tr.

Th. Jurisconsults in treating of proofs, presumptions, conjectures, and indices, have said a number of good things on this subject, and have gone into some considerable detail. They begin with *notoriety*, in which there is no need of proof. Afterwards they come to *complete proofs*, or those which pass as such, upon which they pronounce sentence, at least, in a civil process, but upon which in some places they are more reserved in a criminal process; and they are not wrong in demanding in such case *proofs more than complete*, and especially as regards what is called *corpus delicti*, according to the nature of the act. There are then *proofs more than complete*, and there are also ordinary *complete proofs*. Then there are *presumptions*, which pass provisionally as complete proofs, *i.e.* so long as the contrary is not proved. There are *proofs more than half complete* (to speak precisely), in which the one who relies upon them is allowed to swear to make them good (the *juramentum suppletorium*); there are others *less than half complete*, where wholly to the contrary the oath is administered to him who denies the act, to purge himself (the *juramentum purgationis*). Beyond this there are many degrees of *conjectures* and *indices*. Particularly in a criminal process

ere are indices (*ad torturam*) to proceed to the torture, which
self has its degrees indicated by the formulas of arrest;
ere are indices (*ad terrendum*) sufficient to show the instru-
ents of torture and to prepare things as if they intended to
me to it. There are some (*ad capturam*) to make sure of
suspected man; and (*ad inquirendum*) to make inquiries
cretly and without noise. And these differences may be of
se also on other similar occasions. The entire *form of judi-
al procedure* is nothing else in fact than a species of *logic*
pplied to questions of law. Physicians also have a number
degrees and differences in their *signs* and *indications* which
ay be seen among them. The mathematicians of our times
ave begun to calculate chances upon the occasion of games.
hevalier de Méré,[1] whose "Agrémens" and other works have
een printed, a man of penetrating mind who was both a
layer and a philosopher, gave them an opportunity by form-
ng questions regarding the profits in order to know how much
e game would be worth, if interrupted at such or such a
age. In this way he induced Pascal, his friend, to examine
ese things a little. The question made a stir and gave
uygens the opportunity to produce his treatise "de Alea."[2]

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[1] *Cf. ante*, p. 213, note 2; also *Response* (*Réplique*) *aux reflexions contenues
ns la seconde Edition du Dictionnaire Critique de M. Bayle*, Gerhardt, 4,
0, Erdmann, 190, Janet, 2, 593, Dutens, 2, Pt. I., 92. Antoine Gombault,
evalier de Méré, c. 1610–1684, was erroneously confounded with a Georges
rossin, chevalier de Méré, belonging to another family, by all biographers
nce Moreri, until the special researches of M. de Brémont d'Ars proved the
ror and assigned him his right name. He had an inordinately exalted idea
his own importance and attainments, especially in mathematics. His
*grémens, discours de M. le chevalier de Méré à M^{me} ***, appeared in 1677,
mo, and in the collected edition of all his works, entitled *Œuvres du chevalier
Méré*, Amsterdam, 1692, 2 vols., 12mo. A volume of *Œuvres posthumes*,
mo, appeared at Paris, 1700, and again at The Hague, 1701. For further
count of him, *cf.* Larousse, *Grande Dict. Univ. de XIX^{me} Siècle*, Vol. 11, p.
.—Tr.

[2] *Cf. ante*, p. 150, note 3. Huygens' *De ratiociniis in aleæ ludo*, dated The
ague, 1657, is found in F. van Schooten, *Exercitat. math. lib. V.*, pp. 514–539,
ugd. Bat. 1657, 4to. It was written by Huygens in Dutch and translated into
atin by Schooten. There are two English translations, one attributed to
otte, but probably by Arbuthnot; the other by W. Brown. *Cf.* I. Todhunter,
ist. of the Math. Theory of Probability, pp. 22–23, Cambridge and London,
acmillan & Co., 1865. Leibnitz, *Miscellan. Leibnit.*, No. CXIII., *cf.* Dutens,
Pt. I., 318, says of it: "Christiani Hugenii ratiocinia *de lusu aleæ*, Franc.
chotenii scriptis mathematicis adjecta, sunt elegans specimen ratiocinationis
e gradibus probabilitatis."

Spinoza also discussed the calculation of probabilities in games of chance, Other learned men entered into the subject. Some principle were established of which the Pensioner De Witt also availe himself in a brief discourse printed in Dutch on annuities. The foundation on which they have built goes back to th *prosthaphæresis*,[2] *i.e.* the taking of an *arithmetical* mean be tween several equally receivable suppositions. Our peasant also have made use of it for a long time according to thei *natural mathematics*. For example, when some inheritance o land is to be sold, they form three bodies of appraisers; thes bodies are called *Schurzen* in Low Saxon, and each body make an estimate of the property in question. Suppose, then, tha the first estimates its value to be 1000 crowns, the secon 1400, the third 1500; the sum of these three estimates i taken, viz. 3900, and because there were three bodies, th third, *i.e.* 1300, is taken as the mean value asked for; o rather, they take the sum of the third part of each estimat which is the same thing. This is the axiom: *æqualibu æqualia*, equal suppositions must have equal consideration But when the suppositions are unequal they compare ther with each other. Suppose, for example, that with tw dice, the one ought to win if it makes 7 points, th other if it makes 9, the question is asked what proportio obtains between their probabilities of winning? I reply tha the probability of the last is worth only two-thirds of th

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in a letter to Jan van der Meer. *Cf.* Epistola No. 38 (formerly 43), Spinoz *Opera*, ed. Van Vloten and Land, 2, 145–149 (in Latin and Dutch); *Spinoza Briefwechsel*, in J. H. v. Kirchmann's *Philos. Bibliothek*, Vol. 46, pp. 145 147. — Tr.

[1] *Cf. ante*, p. 426, note 2. John De Witt appears to have been "the first t apply scientific principles to the calculations connected with annuities, whic are analogous to those connected with assurances." His report on this sul ject was presented to the States General, July 30, 1671. It was entitled *D vardye van de lif-renten na proportie van de los-renten*, and appeared at L Haye, 1671. An abstract of it, showing exactly how De Witt reasoned on th subject, will be found in M. Nicolas Struyck, *Inleiding tot het algemeine ge graphy*, etc., p. 345, Amsterdam, 1740, 4to, and an English translation of th tract is printed in *Contributions to the Hist. of Insurance* by Frederic Hendriks in the "Assurance Magazine," Vol. 2 (1852), p. 231. For som remarks on De Witt's hypothesis as to the rate of mortality, *cf.* the same vol p. 393. — Tr.

[2] Prosthaphæresis — προσθαφαίρεσις — = a previous subtraction. The ter here signifies "the fundamental principle for the ascertainment of the degre of probability which requires us to take the arithmetical mean of the existin suppositions estimated according to their relative value." — Tr.

obability of the first, for the first can make 7 in three ways th two dice, viz.: by 1 and 6, or 2 and 5, or 3 and 4; and e other can make 9 in two ways only, by throwing 3 and 6, 4 and 5; and all these methods are equally possible. ıen the probabilities, which are as the numbers of equal ssibilities, will be as 3 to 2, or as 1 to $\frac{2}{3}$. I have more than ce said that a *new kind of logic* would be required which uld treat of the degrees of probability, since Aristotle in s "Topics" has done nothing less than this, and has con- nted himself with putting in a certain order certain popular les distributed according to the common topics, which may of use on some occasion where the question concerns the nplification of the discourse and the giving to it probability ithout putting it to the trouble of furnishing us a necessary lance for weighing probabilities and forming thereupon a lid judgment.[1] It would be well for him who should treat this matter to pursue the examination of *games of chance;* d in general I wish that some skilful mathematician would oduce an ample work with full details and thoroughly asoned upon all sorts of games, which would be very useful perfecting the art of invention, the human mind appearing better advantage in games than in the most serious matters.

§ 10. *Ph.* The law of England observes this rule, that the py of an act received as authentic by witnesses is a good oof, but *the copy of a copy*, however attested, and by wit- sses the most credible, is never admitted as a proof in a ial. I have never yet heard any one censure this wise pre- ution. This observation at least may be drawn from it, at testimony has less force in proportion as it is farther moved from the *original truth* which is in the thing itself; hile among certain peoples use is made of it in a directly ntrary manner, opinions acquiring force as they grow older, d what would not at all have appeared probable a thousand ars ago to a reasonable man a contemporary of the one who st certified it, passes at present as certain because many ve related it upon his testimony.

Th. Historical critics have great regard for contemporary itnesses of things: but a contemporary even merits belief iefly as regards public events only; but when he speaks of motives, secrets, hidden forces, and things which may be disputed, as, for example, poisonings, assassinations, we acquain ourselves with what many have believed. Procopius is very credible when he speaks of the war of Belisarius against the Vandals and the Goths, but when he retails horrible scandals against the Empress Theodora in his "Anecdotes," he may believe them who will.[1] Generally, we should be very reserved in believing satires; we see some published in our times which, although wholly improbable, have nevertheless been greedily swallowed by the ignorant. And some day perhaps it will be said: Is it possible that one would have dared to publish these things at that time, if there had been any apparent foundation for them? But if this statement is some day made, the judgment will be a very erroneous one. The world, however, is inclined to indulge in satire; and, to quote but one example, the late Mr. Maurier, the son,[2] having published, from some caprice, in his memoirs printed some years since, certain things wholly without foundation against the incomparable Hugo Grotius, ambassador from Sweden to France, stirred apparently by some unknown circumstance against the memory of this illustrious friend of his father, I have noticed that many authors have repeated them from envy, although the negotiations and letters of this great man sufficiently make known the contrary. We have emancipated ourselves indeed from writing romances in history, and he who produced the last life of Cromwell thought that in order to enliven the subject he was allowed, in speaking of the life, still private of this clever usurper, to make him travel in France, where he follows him into the public houses of Paris as if he had

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[1] *Cf. ante*, p. 417, note 3.—Tr.

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[1] For critical discussion of the authorship of the Τὰ 'Ανέκδοτα — *Anecdota* or *Historia Arcana* — of Procopius, and of the credibility of its contents, *cf* J. H. Reinkens, *Anecdota sintne scripta a Procopio Cæsariensi inquiritur* Breslau, 1858, who denies, and F. Dahn, *Prokopius von Cäsarea*, Berlin, 1865 who affirms, that Procopius is the author. Prof. James Bryce gives a brie account and estimate of the work in his article on "Procopius," in the *Encyclop. Brit.* 9th ed. *Cf.* also M. Debidour, *Thesis*, 1877, who tries to make out the best case he can for Theodora, and Prof. Bryce in the "Contemporary Review," Feb. 1885. — TR.

[2] Louis Aubery du Maurier, the historian, died 1687, was the son o Benjamin Aubery, an ambassador from France to Holland, and published *Mémoires pour servir à l'Histoire de Hollande*, 1680, *Mémoires de Hamburg de Lubeck, de Holstein*, etc. Leibnitz refers to him in his letter to Bierling Oct. 24, 1709, Gerhardt, 7, 487. — TR.

en his master.[1] But it appears by the history of Cromwell
ritten by Carrington, a well-informed man, and dedicated
his son Richard when he acted the part of the Pro-
ctor, that Cromwell never went out of the British Isles.
etail especially is uncertain. There are almost no good
counts of battles; the majority of those of Titus Livius
pear to be imaginary, as well as those of Quintus Curtius.
would be necessary to have on both sides the accounts of
act and capable men, who indeed would draw up plans of
em like those which the Count of Dahlberg, who had already
rved with distinction under the King of Sweden, Charles
ustavus, and who, being Governor-General of Livonia, re-
ntly defended Riga, has had engraved touching the actions
d battles of this prince. We must not, however, at once
cry a good historian at a word from some prince or minister
ho has exclaimed against him on some occasion, or in regard
some subject not to his taste or wherein there really is per-
ps some fault. The story is told that Charles the Fifth,
ishing to have something of Sleidan[2] read, said: "Bring me
y story-teller (*menteur*)," and that Carlowitz, a Saxon gentle-
an, of good repute at that time, said that the history of Slei-
n destroyed in his mind all the good opinion he had had of
e ancient histories. That statement, I say, will have no force
the minds of well-informed persons in overthrowing the
thority of the history of Sleidan, the best part of which is
series of the public acts of the Diets and Assemblies, and
the writings authorized by the princes. And if there re-
ained the least scruple regarding it, it has just been removed
the excellent history of my distinguished friend, the late
r. Von Seckendorf[3] (in which I cannot, however, refrain

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[1] Leibnitz here refers, according to Schaarschmidt, to Jas. Heath's *Flagel-*
n; or the Life and Death, Birth and Burial of Oliver, the late Usurper,
ndon, 1663, 8vo. In this book the Protector is generously slandered and
used. S. Carrington's *The Hist. of the Life and Death of Oliver Cromwell,*
ndon, 1659, 8vo, is a panegyric, in which Cromwell is compared, among
ers, with Alexander the Great. An abridgment of Heath's book may be
und in the "Harleian Miscellany," I, 279, ed. Park. It may be added that
he earliest lives of Cromwell were either brief chronicles of the chief events
his life or were panegyrics." — Tr.

[2] *Cf. ante*, p. 114, note 1. — Tr.

[3] Veit Ludwig von Seckendorf, 1626–1692, a distinguished German scholar
l statesman, whose *Commentarius historicus et apologeticus de Lutheran-*

from disapproving the term "Lutheranism" on the title-page, which a bad custom has authorized in Saxony), wherein the majority of the statements are justified by extracts from an immense number of pieces, drawn from the Saxon archives which he had at his disposal, although the Bishop of Meaux, who contested their validity, and to whom I sent it, merely replied to me that this book is horribly prolix; but I could wish that it were twice as large on the same scale. The more ample it is, the more hold it must give, since one has only to choose his passages; besides, there are some esteemed historical works which are much greater. For the rest, we do not always despise authors posterior to times of which they speak when what they relate is apparently otherwise. Sometimes, also, it happens that they preserve some most ancient pieces. For example, there has been doubt as to what family Suibert, Bishop of Bamberg, since Pope under the name of Clement II., belonged. An anonymous author of the history of Brunswick, who lived in the fourteenth century, named his family, and some persons learned in our history desired to pay no regard whatever to it; but I have had a chronicle much more ancient, not yet printed, in which the same statement is made with more details, from which it appears that he belonged to the family of the ancient allodial seigniors of Hornbourg (not far from Wolfenbuttel), the territory of which was given by the last owner to the cathedral church of Halberstadt.

§ 11. *Ph.* I do not wish you to think that I desired to lessen the authority and use of history by my remark. It is from this source that we receive with a convincing evidence a larg

ismo sive de Reformatione, Leipzig, 1692, 3 vols., fol., occasioned by an directed against the *L'Histoire du Luthéranisme*, Paris, 1680, of the Jesu Maimbourg, is his most important work, and a rich storehouse of authent materials for the history of the reformation from 1517–1547, drawn fro documents contained in the Saxon archives, the writings of the reformers an their contemporaries, accompanied by a polemical and historical commentar It is the work of an able, philosophic mind, with scarcely a trace of the sect rian spirit. Leibnitz gives a brief account and estimate of the book in h letters to Bossuet, Jan. 8–18, and April 8–18, 1692 (*cf.* Foucher de Carei *Œuvres de Leibniz*, 1, 228, 275, Dutens, *Leibnit. op. om.*, 1. 523–4, 530–531). is also referred to in Bossuet's letters to Leibnitz, Jan. 10, 1692 (F. 1, 226, D. 522), March 26 or May 26, 1692 (F. 1, 253), and Leibnitz to Bossuet, witho dates (F. 1, 223, 254–255). For further remarks of Leibnitz concerning it, Dutens, 5, 90, 93, 566. — Tr.

ırt of our useful truths. I see nothing more valuable than ıe records of antiquity remaining to us, and I wish we had ore of them, and less corrupted. But it is always true that) copy raises itself higher than the certainty of its first iginal.

Th. It is certain, that when we have a single ancient author ; the authority for a fact, all those who have copied him add) weight thereto, or rather should be reckoned as nothing. It ıould be wholly as if what they said belonged to the number, ὸν ἅπαξ λεγομένων, of things which have been said only once, collection of which Menage[1] wished to make. Moreover, toay, if a hundred thousand petty writers should repeat the anders of Bolsec[2] (for example), a man of judgment would ılue it no more than the noise of goslings. Jurisconsults ave written *de fide historica;* but the subject merits a more xact research, and some of these gentlemen have been too ıdulgent. As for that which is of great antiquity, some of ıe most noted facts are doubtful. Clever people have doubted, ith reason, whether Romulus was the first founder of the ıty of Rome. There is dispute about the death of Cyrus, and esides, the discrepancy between Herodotus and Ctesias has pread doubt upon the history of the Assyrians, Babylonians, nd Persians. That of Nebuchadnezzar, of Judith, and even f the Ahasuerus of Esther suffer from great difficulties. The omans, when speaking of the gold of Toulouse, contradict ıe story of the defeat of the Gauls by Camillus. Above all, ıe particular and private history of peoples is without credit, nless it is taken from very ancient originals, and is sufciently in conformity with public history. This is why the stories told us of the ancient German, Gallic, British, Scotch Polish, and other kings pass with reason as fabulous an made up. Trebeta, son of Ninus, founder of Treves, Brutus, ancestor of the Britons, or Britains, are as real as th Amadis. The tales taken from certain story-tellers, whicl Trithemius,[1] Aventin,[2] and even Albinus[3] and Sifrid Petri have taken the liberty to tell of the ancient princes of th Franks, Boii, Saxons, Frisians; and what Saxo Gramaticus and the Edda tell us of the remote antiquities of the north cannot have more authority than what Kadlubko,[5] the firs Polish historian, says of one of their kings, a son-in-law o Julius Cæsar. But when the histories of different peoples agree in instances where there is no appearance that one ha copied another, it is a great sign of their truth. Such is th ord of Herodotus with the history of the Old Testament in ny things, for example, when he speaks[1] of the battle of egiddo between the king of Egypt, and the Syrians of Pales- e, *i.e.* the Jews, in which, according to the testimony of sacred history we have of the Hebrews, King Josias was rtally wounded. The consent of the Arabic, Persian, and rkish historians with the Greeks, Romans, and other occi- ntals gives pleasure to those who seek for facts; as also e testimony which the medals and superscriptions, remain- g from antiquity, render to the books which have come down m the ancients to us and which are, in reality, copies of pies. We must wait for what we shall yet learn of the story of China, until we are in a better condition to judge it, and until it shall bear its credibility with itself. The e of history consists principally in the pleasure there is in owing origins, in the justice rendered to the men who have served well of other men, in the establishment of historical iticism, and especially of sacred history, which supports the undations of revelation, and (putting also aside the geneal- ies and laws of princes and powers) in the useful teachings hich the examples furnish us. I do not despise the thorough amination of antiquities, even to the smallest trifles; for metimes the knowledge which the critics draw from them ay be of use in more important matters. I consent, for ex- aple, to the writing even of the entire history of clothing d of the tailor's art, from the garments of the Hebrew priests, , if you please, from the peltries which God gave to the first ide and bridegroom at their departure from Paradise, to the p-knots and furbelows of our time, and to the union there- ith of all that can be drawn from ancient sculptures and om paintings also made some centuries after. I will furnish deed, if any one desires it, the memoirs of a man of Augs- rg of the past century, who is described with all the clothes hich he wore from his infancy up to the age of 63 years. I not know who told me that the late Duke of Aumont,[2] a great connoisseur of fine antiquities, had a similar curiosity This may perhaps be of use in distinguishing the legitimat monuments from those which are not so, not to speak of othe uses. And since men are allowed to play, they will stil further be allowed to divert themselves with these kinds o work, if their essential duties do not suffer thereby. But wish there might be some persons who would devote themselves preferably to drawing from history that which is mor useful, as the extraordinary examples of virtue, remarks upo the conveniences of life, stratagems of politics and of war And I wish that a kind of universal history were writte which should indicate only such things, and some few other of more consequence; for sometimes one reads an extensiv historical work, learned, well-written, suited also to the en of the author, and excellent of its kind, but which contain little useful instruction, by which I do not mean here simpl morality, with which the "Theatrum vitæ humanæ"[1] and othe such *florileges* are filled, but skill and knowledge of which everybody would not think in case of need. I wish also tha an infinite number of things of this nature, by which we migh profit, might be drawn from books of travel, and be arrange according to the order of the subjects. But it is astonishin that while so many useful things remain to be done, me amuse themselves almost always with what is already done or with purely useless things, or at least with what is th least important, and I see little remedy therefor until th public is more concerned about them in more tranquil times.

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[1] *Cf. ante*, p. 350, note 1.—Tr.

[2] Jérôme Hermès Bolsec, born at Paris, died 1685, at Lyons, was a Carmele of Paris, who forsook his order, became a Protestant, fled to Italy and ıence to Geneva, where he set up as a physician, but not meeting with the ıccess he desired, gave himself up to theology, discoursed publicly on the octrine of Predestination, advocating the views of Pelagius, and thus incuring the censure of Calvin, was imprisoned and then banished by the Senate of eneva, Dec. 29, 1551. He went thence to Bern, whither Calvin pursued him. hese persecutions developed in him a violent hatred towards Calvin, which, fter his return to the Catholic faith, he vented in his *L'Histoire de la vie, ıœurs, actes, doctrine et mort de Jean Calvin*, Paris, 1577, 8vo. He also pubshed a similar work, *L'Histoire de la vie, mœurs, doctrine et déportements de héodore de Bèze*, Paris, 1580, 8vo. Both works are merely pamphlets, with o historical authority.—Tr.

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[1] Johann Trithemius, 1462–1516, abbot of Spanheim, whose *Compendium sive breviarium primi voluminis annalium, sive historiarum, de origine reru et gentis Francorum* appeared at Mainz, 1515, reprinted, Paris, 1539. Leibnitz speaks of him in his *Introd. in collectionem Scriptorum Histor. Brunsvicensi inservientium*, Dutens, 4, Pt. II., 4, 5. For an account of him, *cf* Michaud, *Biog. Univ.* Vol. 46, pp. 551–559. — Tr.

[2] Johann Thurmayr Aventinus, 1466–1534, author of *Annales Boiorum* His history, the materials of which were drawn from authentic sources, wa finished in 1528, and published "with some important omissions" of passage adverse to the Roman Catholics by Zeigler in 1554. The omitted passages wer afterwards restored by Nicolas Cisner in the Basle ed., 1580. Leibnitz mention him in his *Introd. in col. Script. Histor. Brunsvic.*, Dutens, 4, Pt. II., 4. — Tr.

[3] Alcuin, — Latin, Alcuinus or Albinus Flaccus, — c. 735–804, the instructo of Charlemagne, whose collected works, containing among other things som historical treatises, were first published by And. Duchesne, Paris, 1617, 1 vol. fol., and afterwards by Froben, *Alcuini opera, post editionem ab And. Quercetano curatam, de novo collata, emendata, aucta et illustrata*, 2 vols., fol. Ratisbon, 1777. Migne, *Patrol.*, Vols. 100, 101, is a reprint of this ed. — Tr.

[4] Sifrid or Suffrid Petri, 1527–1597, a Dutch philologist of great learning but deficient in critical ability and taste, was Professor of Latin and Greek i the University of Erfurt, 1557, of Law at Cologne, 1577, and of Canon Law a Louvain and Cologne, 1585. He was the historiographer of the States of Friesland, and published *De Frisiorum antiquitate et origine lib. III.*, Cologne 1590; *De Scriptoribus Frisiæ decades XVI. et semis*, Cologne, 1593. Hi *Historia veterum episcoporum Ultrajectinæ sedis et comitum Hollandiæ* appeared at Francker, 1612. — Tr.

[5] Vincent Kadlubek or Kodlubko, 1161–1223, bishop of Cracow, a Lati chronicler of the early history of Poland, whose *Historia Polonica*, Dobromiel, 1612, 12mo, written with spirit, but in a barbarous style, throw much light on the events of his own time, but must be received with caution as regards the early period, since he treated the early legendary stories, man of which closely resemble the Scandinavian sagas, as genuine history. Th work is in four books and extends to the year 1202, and is true and faithfu in relating events in Poland in the 11th and 12th centuries. — Tr.

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[1] *Cf.* Herodotus II. 159, and notes of Bähr and Rawlinson on the passage. Tr.

[2] Louis-Marie-Victor d'Aumont, 1632–1704, a French scholar, numismatist, d "brigadier du roi" under Louis XIV. in the Low Countries, contributed ich to the progress of the knowledge of medals, and was a member of the Académie des inscriptions et Belles-Lettres." — Tr.

§ 12. *Ph.* Your digressions give pleasure and profit. Bu from the probabilities of facts, let us come to those of opinion concerning things which do not fall under the senses. Such things are incapable of any testimony, for example, the existence and[2] nature of spirits, angels, demons, etc., the materia substances which are in the planets and other mansions[3] o

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[1] Theodore Zwinger, 1533–1588, a celebrated Swiss physician, whose *Theatrum vitæ humanæ*, "a vast compilation of historical facts and anecdotes, an of curious and piquant observations," in preparing which he availed himsel of the materials which his father-in-law, Lycosthenes [Conrad Wolffhart] 1518–1561, had collected and asked him to set in order, appeared at Basle 1565–1604, 5 vols., fol. — Tr.

[2] Gerhardt reads: "de," a Ms. or typographical error; Erdmann, Jacques and Janet have "et." — Tr.

[3] Locke's word, *Philos. Works*, Vol. 2, p. 279 (Bohn's ed.). — Tr.

is vast universe; finally, upon the mode of operation of the
jority of the works of nature, and of all these things we
n have merely conjectures, wherein *analogy*[1] is the great
le of probability. For being incapable of attestation, they
n appear probable only so far as they agree more or less
th established truths. As violent friction of two bodies
oduces heat and even fire, as the refractions of transparent
dies produce the appearance of colors, we think that *fire*
nsists in a violent agitation of the imperceptible parts, and
at *colors* also, whose origin we do not see, come from a simi-
r refraction; and finding that there is a *gradual connection*
all the parts of the creation that may be subject to human
servation, without any considerable gap between any two,
e have every reason to think that things rise also towards
rfection gradually and by insensible degrees.[2] It is difficult
say where the sensible and the rational begin, and what is
e lowest degree of living things; it is like the increase or
minution of quantity in a regular cone. The difference is
ceeding great between certain men and certain animals;
it if we wish to compare the understanding and capacity of
rtain men and certain brutes, we shall find so little differ-
ice, that it will be very difficult to assert that the under-
anding of these men is clearer or more extended than that
these brutes. When, therefore, we observe such an insensi-
e gradation between the parts of creation from man to the
west parts beneath him, the rule of analogy makes us regard
as probable that there is a parallel gradation in the things
ove us and beyond the sphere of our observation, and this kind
probability is the broad foundation of rational hypotheses.[3]

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[1] In the case of natural phenomena beyond the reach of the senses, analogy
the great rule of probability, the reasoning in general being hypothetical
ly, and the force and certainty of the conclusion therefrom being directly
oportional to the reality and degree of the resemblance or similarity of the
enomena. Since Locke's and Leibnitz's day, great advance has been made
our knowledge of the nature of the materials existing in the various heav-
ly bodies, chiefly through the aid of the spectroscope and spectral analysis,
t only strengthening and increasing the measure of probability in the appli-
tion of the conclusion from analogy to the conjectured conditions of other
orlds, but in some cases and to a certain extent giving us well accredited
sitive knowledge in regard to their constitution. — Tr.

[2] *Cf.* A. C. Fraser, *Locke's Essay Concerning Human Understanding*, Vol.
p. 380, note 2. Oxford, Clarendon Press, 1894. — Tr.

[3] The probable conclusion from analogy is a rational hypothesis, whose

Th. It is upon the ground of this *analogy* that Huygens, i his "Cosmotheoros,"[1] judges that the condition of the othe principal planets is quite similar to ours, excepting the difference which their different distance from the sun must cause and Fontenelle,[2] who had already before published his conversations full of wit and knowledge on the plurality of worlds

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hypothetical character consists in the fact that it is not a completely exhaustive induction or a mathematical demonstration from the given data, therefor still problematical, and whose rationality consists in the fact that no know reason exists against the assumed instance, but on the contrary the analog itself directly furnishes occasion for a provisional consideration of, if not belief in, the hypothesis. — Tr.

[1] *Cf. ante*, p. 150, note 3. Huygen's *Cosmotheoros, sive de terris cœlestibu earumque ornatu conjecturæ* — a speculation concerning the inhabitants o the planets, and the last work of the great physicist and mathematician – appeared posthumously, at the Hague, 1698, and in a German trans., Leipzig 1703, just before Leibnitz wrote Bk. IV. of the *New Essays*, and in an Englis trans., entitled, *The Celestial World discovered; or Conjectures concernin the Inhabitants, Plants, and Productions of the Worlds in the Planets*, London, 1699, 8vo; *Conjectures concerning the Planetary Worlds*, Glasgow, 1727 12mo. The work is found in Huygens, *Opera Omnia*, Leyden, 1824, 2 vols., Vol. 1, pp. 641–722. — Tr.

[2] Bernard le Bovier de Fontenelle, 1657–1757, a litterateur rather than philosopher, who, nevertheless, according to Janet, "belongs to the history o philosophy, through the spirit of inquiry and criticism which animates hi works," attempted, and successfully, in his *Entretiens sur la pluralité de mondes*, Paris, 1686, 12mo (a sixth *Entretien* was added in the Paris ed. o 1687, according to Brunet) to popularize the astronomical theories and doctrines of Copernicus and Descartes. The work is a fine illustration of th possibility of making science, without ceasing to be scientific, intelligible an interesting to the men of the world. Fontenelle became a member of th "Académie Française" in 1691, and, on the revival of the "Académie des Sciences de Paris" in 1699, was nominated its perpetual secretary, and continue in that office for fifty-eight years, publishing each year a volume of the *Histoir* of this *Académie*, containing clear and orderly arranged extracts from or analyses of the papers read before the *Académie*, often accompanied with new an profound views of his own, together with *Éloges* of the members dying i each year, among which is the *Éloge de Leibniz*, "a masterpiece," found i *L'Histoire de l'Académie Royale des Sciences de Paris, année* 1716; in Vol. 3 1722, of the collection of these *Éloges*, 69 in number, entitled *Histoire d renouvellement de l'Académie Royale des Sciences en 1699, et Éloges historique des Académiciens morts depuis ce temps-là*, 3 vols., Paris, 1708–1722; in *Œuvres de Fontenelle*, 3 vols., La Haye, 1728–29, Vol. 3, pp. 232–259; new ed., 11 vols., Paris, 1766, Vol. 5, pp. 447–506; and in F. Bouillier, *Éloges de Fontenelle avec une Introd. et des Notes*, Paris, 1883, pp. 103–134; *cf.* also Jacques, *Œuvres de Leibniz*, Vol. 2, pp. i–xxiv, Dutens, *Leibnit. op. om.*, Vol. 1, pp. xix–liii.

The *Entretiens sur la pluralité des mondes* is found in *Œuvres de Fontenelle*, La Haye, 1728–1729, Vol. 1, pp. 149–234; new ed., Paris, 1766, Vol. 2, pp. 1–190; there is a German trans. by Gottsched, 1751, Eng. trans. by Glanvill, London, 1688, 1768, by A. Behn and others, London, 1801, and from the

said some pretty things thereupon, and has discovered the
of enlivening a difficult[1] subject. He would say, as it
e, that a harlequin in the empire of the moon is altogether
t it is here. It is true that we judge in a wholly different
of moons (which are satellites merely) than of the princi-
planets. Kepler[2] has left a little book which contains an
nious story upon the condition of the moon, and an Eng-
man,[3] an *homme d'esprit*, has published the humorous de-
ption of a Spaniard (of his own invention) whom some birds
assage transported to the moon, not to mention Cyrano,[4]
since went to find this Spaniard. Some clever men, wish-
to present a beautiful picture of the other life, conduct
happy souls from world to world; and our imagination
s therein a part of the agreeable occupations which may be
ibed to genii. But however it may strive, I doubt if it
attain its object, because of the great interval between us
these genii, and the great variety found therein. And
il we find telescopes like those Descartes made us hope
in order to discern parts of the moon's sphere no larger
n our houses, we cannot determine what there is in a globe
erent from ours. Our conjectures will be more useful and

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st and best" ed., with notes and a critical account of the author's writing
he astronomer Jerome de la Lande, Paris, 1800, by Miss E. Gunning, 1803.
ontenelle was author also of *Dialogues des morts*, Paris, 1683; *L'Histoire*
Oracles, Paris, 1687; *Doutes sur le système physique des causes occasio-*
es, against Malebranche, Paris, 1686. — Tr.

Jacques reads: "fort difficile." — Tr.

Cf. ante, p. 123, note 2. The book of Kepler here referred to by Leibnitz
s *Somnium seu de astronomia lunari*, Francofurti, 1634, 4to, published
r his death by his son, and found in Frisch, *J. Kepleri opera omnia*, Vol.
t. I., pp. 21–39. The concluding paragraphs, pp. 38–39, are of a zoölogical
ethnological character. Michaud (*Biog. Univ.* 22, 313) says it is a philo-
ical and allegorical romance, in which the author exposes the astronomical
nomena as they would appear to the inhabitants of the moon, who like
elves think that they are at the centre of the universe, but who are not so
situated as we to raise themselves to the "idea" of the true system.
arschmidt states that Kepler had occupied himself with Plutarch's *De*
e in orbe lunæ (Eng. trans. in *Plutarch's Morals*, ed. Goodwin, 5, 234–
— the Moon-Dæmons, 289) and from the tales about the moon-dæmons
ein contained related by Sylla, had derived his idea of a lunar geography.
R.

Franc. Godwin. *Cf. ante*, p. 342, note 2. — Tr.

Cf. ante, pp. 228, note 2; 399, note 3. The reference is to his *Voyage dans*
une. *Cf. Théodicée*, Pt. III., § 343; Gerhardt, 6, 318; Erdmann, 603 b;
ques, 2, 268; Janet, 2, 359, 360; Dutens, 1, 364. — Tr.

more true upon the internal parts of our bodies. I hope th we shall go beyond conjecture on many occasions, and I alread now believe that at least the violent agitation of the parts of t fire of which you just spoke should not be reckoned among t things which are only probable. It is a pity that the hypothes of Descartes regarding the constitution (*contexture*) of the par of the visible universe has been so little confirmed by the r searches and discoveries since made, or that Descartes did n live fifty years later to give us an hypothesis upon the basis present knowledge as ingenious as the one he gave upon t basis of the knowledge of his time.[1] As for the gradual co nection of species, we have said something concerning it in preceding conference, in which I remarked that philosophe had already reasoned *upon the vacuum in the forms* or specie Everything goes by degrees in nature, and nothing by leaps, ar this rule regarding changes is a part of my law of continuity But the beauty of nature, which desires distinct perception demands the appearance of leaps, and so to speak musical c dences in phenomena, and takes pleasure in mixing the specie Thus although there may be in some other world mediate sp cies between man and beast (according as we understand the words), and although there may be somewhere rational anima surpassing us, nature has found it good to keep them awa from us, in order to give us without contradiction the sup riority we have in our globe. I speak of mediate species, an I should not wish to regulate myself here by human indivi uals, who approach the brutes, because apparently this is no a defect of faculty, but a hindrance to its exercise; so that think that the most stupid of men (who is not in a conditio contrary to nature by reason of some disease or some other pe manent defect taking the place of the disease) is incomparabl more rational and more docile than the most spiritual of a

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[1] Leibnitz here refers to Descartes' theory of vortices, which he elaborat in his *Principia Philosophiæ*, Pts. III. and IV. A brief account of it will b found in the *Encyclop. Brit.*, 9th ed., article "Descartes," Vol. 7, pp. 107-1 (American Reprint). *Cf.* also J. H. v. Kirchmann's German translation, wi notes, of the *Prin. Philos.* (Vol. 26, Pt. I., of his *Philos. Bibliothek.*), 2d e Heidelberg, 1887. For other references of Leibnitz to the theory, *cf.* Ge hardt, *Leibniz. philos. Schrift.*, 4, 283, 288–289, 340 (Dutens, *Leibnit. op. om* 3, 252–253), 348. — TR.

[2] *Cf. ante*, p. 333–334. — TR.

[3] *Cf. ante*, p. 334, note 1. — TR.

beasts, although the contrary is sometimes said by way of
tticism. For the rest, I strongly approve the search for
ogies: plants, insects, and the comparative anatomy of
nals will furnish them more and more, especially if we
inue to avail ourselves of the microscope still more than
have done. And in matters more general you will find
my views concerning the Monads diffused everywhere,
r unending duration, the conservation of the animal with
soul, the perceptions undistinguished in a certain condi-
, such as the death of simple animals, the bodies which
s rational to attribute to genii, the harmony of souls and
ies, which causes each to follow perfectly its own laws
hout being disturbed by the other and without the necessity
listinguishing therein the voluntary or the involuntary: you
find, I say, that all these views are entirely conformed to
analogy of the things which we observe and which I
ely extend beyond our observations, without limiting them
ertain portions of matter or to certain kinds of actions, and
t the only difference therein is from the great to the small,
n the sensible to the insensible.

13. *Ph.* Yet there is one case where we defer less to the
logy of natural things which experience has made known
us, than to the contrary testimony of a strange fact which
ar from it. For when supernatural events are conformed
he ends of him who has the power to change the course of
ure, we have no reason for refusing to believe them when
l attested, and this is the case of *miracles* which find not
y belief for themselves, but give it also to other truths
ich need such confirmation.[1] § 14. Finally, there is a testi-

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Leibnitz here takes no notice of this remark of Locke concerning miracles,
expresses himself briefly on the subject in the *New Essays*, Preface, *ante*,
5, and Bk. IV., chaps. 17 *ad fin.*, *infra*, p. 582, 19 *ad fin.*, *infra*, p. 606; and
e fully in the *Théodicée*, Discours préliminaire, etc., § 3, Gerhardt, 6, 50,
mann, 480, Jacques, 2, 26, Janet, 2, 34, Dutens, 1, 65, Pt. I., § 54, Pt. II.,
07, 208, Pt. III., § 249; *Discours de metaphysique*, 1686, §§ 7, 16, G. 4, 432,
; *Remarques sur la lettre de M. Arnaud*, May 13, 1686, G. 2, 40; Letters to
rke, G. 7, 352 *sq.*, E. 746 *sq.*, Js. 2, 414 *sq.*, Jt. 2, 617 *sq.*, D. 2, Pt. I., 110 *sq.*,
ns. Duncan, 238 *sq.*, No. 1, § 4, No. 2, § 12, No. 3, §§ 13–17, No. 4, §§ 33, 40,
15, No. 5, §§ 107, 109–113, 115–118; *Response aux Objections contre le Système*
'harmonie préétablie qui se trouvent dans le livre [du P. François Lami] *de*
Connoissance de soy-même, 1709, G. 4, 594, E. 460, D. 2, Pt. I., 100, and the
ay, first printed by Gerhardt, 4, 577–590, referring to the same book, and
ed Berlin, Nov. 30, 1702, G. 4, 587; Letter to Tentzel, 1693, Dutens, 5, 401;

mony which outweighs all other assent, viz. *revelation, i.e.* the testimony of God, who can neither deceive nor be deceived and the assent we give to it is called faith, which excludes all doubt as perfectly as the most certain knowledge. But the point is, to be assured that the revelation is divine, and to know that we understand its real sense; otherwise, we are exposed to fanaticism and the errors of a false interpretation. And when the existence and the sense of revelation is only probable, the assent cannot have a greater probability than that found in the proofs. But we shall speak of this still farther.

Th. Theologians distinguish between the *motives of credibility* (as they call them), together with the natural assent which must spring from them and which cannot have more probability than these motives, and the *supernatural assent*, which is an effect of the divine grace. Books have been

Annotatiunculæ subitaneæ ad Tolandi librum, De Christianismo mysteriis carente, written Aug. 8, 1701, Dutens, 5, 146, 148; Letters to Hartsoeker, Feb. 6, 1711, G. 3, 517–518, D. 2, Pt. II., 61, Dec. 7, 1711, G. 3, 529; *Systema theologicum*, written probably c. 1686, ed. C. Haas, Tübingen, 1860, p. 139. *Cf.* also the discussions by Pichler, *Theol. d. Leibniz*, 1, 226–237; K. Fischer, *Gesch. d. n. Philos.*, Bd. II., Leibniz, 3d ed., pp. 573–576; O. Pfleiderer, *Religionsphilosophie*, 2d ed., Berlin, 1883, Vol. 1, pp. 90–94, Eng. trans., Vol. 1, pp. 91–93

Leibnitz — whether consistently or not with his philosophical system is fairly open to question — certainly admits the possibility, and upon sufficient and proper evidence the actuality, of miracles in the sense of personal acts of God in his universe, should a sufficient and proper reason therefor exist in God's mind. Such acts were not violations of law, but consisted simply in the substitution of a higher law for a lower, and the introduction of a new force in accord therewith. Leibnitz justifies his view thus: (1) The laws or order of nature are not metaphysical necessities, but positive truths, resting on the divine choice of the best as governed by the divine wisdom, and therefore amenable to the requirements of that wisdom, the physical always being subject to the moral order and purpose — "Cum natura rerum nihil aliud sit quam consuetudo Dei, ordinarie aut extraordinarie agere æque facile ipsi est, prout sapientia ejus exigit" (*Syst. theol.* p. 139, ed. Hass, Tüb. 1860); (2) All these acts were foreseen as *possible*, and as such included in the original ideal world-plan by the divine intelligence, and therefore involve no change or inconsistency in that plan; *cf. Discours de metaphys.*, § 7, G. 4, 432: "Or puisque rien ne se peut faire, qui ne soit dans l'ordre, on peut dire que les miracles sont aussi bien dans l'ordre que les operations naturelles, qu'on appelle ainsi parce qu'elles sont conformés à certaines maximes subalternes que nous appellons la nature des choses." And he continues in language which would be quoted more appropriately as a parallel passage to that just cited from the *Syst. theol.:* "Car on peut dire que cette nature n'est qu'une coustume de Dieu, dont il se peut dispenser à cause d'une raison plus forte, que celle qui l'a mû à se servir de ces maximes." — TR.

tten expressly on the *Analysis of Faith* which do not alto-
her agree among themselves, but since we shall speak of
s in the sequel, I do not wish to anticipate here what we
ll have to say in its place.

CHAPTER XVII

OF REASON

1. *Ph.* Before speaking distinctly of faith, we shall treat
reason. It signifies sometimes clear and true principles,
netimes conclusions deduced from these principles, and some-
es the cause, and particularly the final cause. Here we
sider it as a faculty by which man is supposed to be dis-
guished from the beasts and in which it is evident that he
ch surpasses them. § 2. We need it both to extend our
wledge[1] and to regulate our *opinion*, and it constitutes,
perly understood, two faculties, *sagacity*, for the discovery
mediate ideas, and the faculty of drawing conclusions, or
rence. § 3. We may consider in reason these four degrees:
the discovery of proofs; (2) their orderly arrangement show-
their connection; (3) the perception of the connection in
h part of the deduction; (4) the drawing of the conclusion.
may observe these degrees in mathematical demonstrations.
Th. The *reason* is the known truth whose connection with
ther less known makes us give our assent to the latter. But
particular and pre-eminently we call it reason, if it is the
se not only of our judgment, but also of the truth itself,

Locke, and in agreement with him here Leibnitz, uses "reason," as
arschmidt says, not in the sense of the νοῦς of Plato and Aristotle, as the
lty of ideas and first principles, but in the sense of the Greek λόγος, as the
er or faculty of drawing conclusions, thus serving to extend our knowl-
, a process which may be synthetic and deductive as well as analytic and
ctive. The function of logic in regulating opinion as opposed to its func-
in extending knowledge is the production of the logical arrangement of
wledge and the classification of concepts, both of which greatly influence
reasoning process and its result, and thereby effect both the extension of
wledge and the regulation of opinion. For a fuller exposition of Locke's
v, *cf.* J. H. v. Kirchmann, *Erläuterungen zu J. Locke's Versuch ü. d.*
schl. Verstand, No. 432, Vol. 52, Pt. II., pp. 105–108, of his *Philos.*
liothek, Berlin, 1874. — Tr.

which we also call *reason a priori*, and the *cause* in things corresponds to the *reason* in truths. This is why cause indeed is often called reason, and particularly final cause. Finally, the faculty which perceives this connection of truths, or the faculty of reasoning, is also called *reason*, and this is the sense you employ here. Now this faculty is really affected by man alone here below, and does not appear in other animals here below; for I have already shown above that the shadow of reason seen in the beasts is only the expectation of a similar event in a case apparently similar to the past, without knowing whether the same reason holds good. Men themselves act no differently in the cases where they are only *empirical*. But they raise themselves above the beasts, in so far as they see the connections of truths, the connections, I say, which themselves indeed constitute the necessary and universal truths. These connections are indeed necessary although they produce only an opinion, when after an exact research the prevalence of probability, so far as may be judged, may be demonstrated, so that then there is *demonstration*, not of the truth of the thing, but of the side prudence requires us to take. In dividing this faculty of reason, I think we do no wrong in recognizing two parts, according to a sufficiently received opinion which distinguishes *invention* and *judgment*. As for the four degrees which you remark in mathematical demonstrations, I find that usually the first, viz.: the discovery of proofs, does not appear therein, as is to be desired. There are syntheses, found sometimes without analysis, and sometimes the analysis has been suppressed. Geometers in their demonstrations put first the *proposition* which is to be proved, and in order to come to the demonstration they set forth by some figure what is given. This is called *ecthesis*. After this they come to the *preparation* and draw new lines which they need in the reasoning; and often the greatest art consists in finding this preparation. This done, they construct the *reasoning* itself, by drawing inferences from what was given in the ecthesis and from what has been added thereto by the preparation; and employing for this purpose truths already known or demonstrated, they reach the *conclusion*. But there are cases where they dispense with the ecthesis and the preparation.

§ 4. *Ph.* It is generally believed that the *syllogism* is the

at instrument of reason and the best means of making use
this faculty. For myself I doubt it, for it serves only to
w the connection of proofs *in one single example* and no
re; but the mind sees the connection as easily and perhaps
ter without it. Those who know how to use the figures and
moods most frequently take their use for granted by an
plicit faith in their masters without understanding their
son. If the syllogism is necessary, no one knew anything
atever by reason before its invention, and it will be neces-
y to say that God having made man a two-legged creature,
t it to Aristotle to make him a rational animal; I mean from
t small number of men that he could induce to examine the
unds of syllogisms, where among more than sixty ways of
ming the three propositions there are only *about fourteen of*
m valid. But God has been much kinder to men; he has
en them a mind capable of reasoning. I do not say this to
er Aristotle, whom I regard as one of the greatest men of
iquity, whom few have equalled in extent, subtility, pene-
tion of mind, and strength of judgment, and who by the very
t that he has invented this brief system of the forms of
umentation has rendered a great service to savants against
se who are not ashamed to deny everything. But yet these
ms are not the only nor the best means of reasoning; and
istotle did not find them by means of the forms themselves,
by the original way of the manifest agreement of ideas;
l the knowledge acquired of them in the natural order in
thematical demonstrations appears better without the aid
ny syllogism. To *infer* is to draw a proposition as true
m another already advanced as true, by supposing a certain
nection of mediate ideas; for example, from the proposition
t men will be punished in another world, we infer that they
determine themselves here. Here is the connection: *Men*
be punished and God is the one who punishes; therefore
ishment is just; therefore *the punished is guilty;* therefore
could have done otherwise; therefore *he is free;* therefore
lly *he has the power of self-determination.* The connection
seen better here than if there were five or six involved
logisms, in which the ideas would be transposed, repeated,
enshrined in artificial forms. The question is to know
t connection a mediate idea has with the extremes in a

syllogism; but *this is what no syllogism can show.* It is th
mind which can perceive these ideas so placed by a kind o
juxtaposition, and that too by its own view. Of what us
then is the syllogism? It is of use *in the schools* where *me*
are not ashamed to deny the agreement of ideas which plainl
agree. Whence it comes that men never make syllogisms i
their own inquiries after truth or in their teaching of thos
who sincerely desire to know it. It is quite plain, also, tha
this order is the more natural: —

man — animal — alive;

i.e. man is an animal, an animal is alive, therefore man i
alive, than that of the syllogism: —

animal — alive, man — animal, man — alive;

i.e. the animal is alive, man is an animal, therefore man i
alive. It is true that syllogisms may be of use in discoverin
a fallacy concealed under the brilliant splendor of an ornamen
borrowed from rhetoric, and I had sometimes thought that th
syllogism was necessary, at least to guard against sophism
disguised under florid discourse; but after a more sever
examination, I have found that we have only to distinguis
the ideas upon which the conclusion depends from those whic
are superfluous, and to arrange them in a natural order to sho
their incoherence. I knew a man to whom the rules of th
syllogism were wholly unknown, who perceived at once th
weakness and false reasoning of a long artificial and plausibl
discourse with which others better skilled in all the finesse
logic suffered themselves to be entrapped; and I believe th
there will be few of my readers who do not know such person
If that were not so, princes in matters relating to their crow
and dignity would not fail to introduce syllogisms into the mo
important discussions, where, however, everybody believes
would be a ridiculous thing to make use of them. In Asi
Africa, and America, among peoples independent of the Eur
peans, scarcely any one has ever been heard to speak of the
Finally, it is found after all that these scholastic forms are n
less liable to error; people also are rarely reduced to silen
by this scholastic method and still more rarely convinced an
won. They will recognize at most that their adversary is mo

roit, but they do not cease to be persuaded of the justice of eir cause. And if fallacies may be involved in the syllogism, e fallacy must be discovered by some other means than that the syllogism. Yet I am not of the opinion that syllogisms e to be rejected or that we are to deprive ourselves of any eans capable of aiding the understanding. There are eyes ich need spectacles; but those who use them should not say at no one can see well without spectacles. This would be vering nature in favor of an art, to which they are perhaps btors. Unless it may have happened to them wholly con- ry to the experience of persons who have availed themselves much or too soon of spectacles, so that they have so thor- ghly obscured their sight by means of them that they are no ger able to see without their aid.

Th. Your reasoning on the little use of syllogisms is full of umber of solid and fine remarks, and it must be admitted at the scholastic form of syllogisms is little employed in the rld and that it would be too long and perplexing if one sired to employ it seriously. And yet, would you believe I consider the invention of the form of syllogisms one of e most beautiful, and also one of the most important, made the human mind.[1] It is a species of *universal mathematics* ose importance is not sufficiently known; and it may be said at an *infallible art* is therein contained, provided we know and use it, which is not always allowed. Now you must know at by *arguments in form*, I mean not merely this scholastic de of argument used in colleges, but all reasoning which cludes by the force of the form, and in which there is no ed of supplying anything, so that a *sorites*, another syllogistic ies which avoids repetition, even an account well drawn up, l algebraic calculation, an infinitesimal analysis, will be for almost arguments in form, because their form of reasoning been predemonstrated, so that we are certain not to be eived thereby. The demonstrations of Euclid most fre- ntly come near being arguments in form; for when he arently produces *enthymemes*, the proposition suppressed l seemingly lacking is supplied by the citation on the mar- where is given the means of finding it already demonstrated;

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[1] *Cf. ante*, p. 379, note 2. The letter to G. Wagner is Leibnitz's most com- e expression of his estimate of the worth of formal logic. — Tr.

this gives a great abstract without taking anything from it force. These inversions, compositions, and divisions of reason which he makes use of are only the species of forms of argumentation peculiar and characteristic of the mathematician and to the matter they treat; and they demonstrate these form with the aid of the universal forms of logic. Further, you mus know that there are *good asyllogistic conclusions* which als cannot be rigorously demonstrated by any syllogism withou changing somewhat its terms; and this change itself of term makes the conclusion asyllogistic. There are several of thes as among others, *a recto ad obliquum;* for example, Jesus Chri is God; therefore the mother of Jesus Christ is the mother God. Again, that which clever logicians have called *inversio of relation*, as, for example, this conclusion: if David is th father of Solomon, without doubt Solomon is the son of Davi These conclusions do not cease to be demonstrable by the trut on which the common syllogisms themselves depend. Syll gisms also are not merely categorical, but also hypothetical, i which are comprised the disjunctives. And we may say th the categorical are simple or complex. The simple categorica are those which are usually reckoned, *i.e.* according to th moods of the figures; and I have found that the four figur have each six moods, so that there are twenty-four moods i all. The four common moods of the first figure are only th result of the meaning of the signs, All, No, Some. And th two which I add to them in order to omit nothing are onl the subalterns of the universal propositions. For of these tw ordinary moods, All B is C, and all A is B, therefore all A C; again, No B is C, All A is B, then no A is C, we make the two *additional moods*, All B is C, All A is B, then some A is again, No B is C, All A is B, then some A is not C. For it not necessary to demonstrate the *subaltern* and to prove i conclusions: All A is C, then some A is C; again, No A is then some A is not C, although we may, however, demonstra it by the identicals joined with the moods already received the first figure, in this way: All A is C, Some A is A, th some A is C; again, No A is C, Some A is A, then some A not C. So that the two additional moods of the first figure a demonstrated by the first two ordinary moods of the said figu with the intervention of the subaltern, itself demonstrable other two moods of the same figure.[1] In the same way the ond figure receives also two new ones. Thus the first and the ond have six; the third has had six always; the fourth was en five, but it is found to have six also by the same principle addition. But we must know that logical form does not d us to this order of propositions which we commonly use, l I am of your opinion, sir, that this other arrangement is erior in value: All A is B, All B is C, therefore all A is C, ich would be particularly by the sorites, which are a *chain* such syllogisms. For if there were one more of them: All is C, All C is D, therefore all A is D, we may make a chain these two syllogisms, which avoids the repetition by saying: l A is B, All B is C, All C is D, therefore all A is D, wherein see that the useless proposition All A is C is neglected, and useless repetition of this same proposition which the two logisms would demand is avoided; for this proposition is nceforth useless, and the chain is an argument perfect and good form without this same proposition when the force of chain of reasoning has once for all been demonstrated by ans of these two syllogisms. There is an infinite number other chains of reasoning more complex, not only because greater number of simple syllogisms enter therein, but also cause the *ingredient* syllogisms exhibit greater differences nong themselves, for there may be made to enter into them t only simple categoricals, but also copulatives, and not ly categoricals, but also hypotheticals; and not only comte syllogisms, but also enthymemes, wherein the proposions believed evident are suppressed. And all this joined th the asyllogistic conclusions, and with the transposins of the propositions, and with a multitude of turns and ughts which conceal these propositions through the natural lination of the mind to abridge, and by the properties of guage appearing in part in the employment of the partis, will make a *chain* of reasoning which will represent entire argumentation indeed of an orator, but emaciated and stripped of its ornaments and reduced to *logical form,* no scholastically, but always sufficiently to recognize its force according to the laws of logic, which are none else than thos *of good sense,* placed in order and in writing, and which diffe no more than the custom of a province differs from what it ha been when from unwritten as it was, it has become writter except that being put in writing and being capable of bein better seen at once, it furnishes more light to enable it to b pushed and applied; for natural good sense without the aid o art, making the analysis of certain reasoning, will sometime be a little in trouble regarding the force of conclusions, findin some, for example, which include some mood, valid for trut but less ordinarily used. But a logician who wished us not t make use of such series, or wished not to make use of ther himself, claiming that we must always reduce all the comple arguments to the simple syllogisms on which in fact they depend, would be, according to what I have already said to you like a man who wished to compel the merchants of whom h buys something to count for him the numbers one by one, as w count on the fingers, or as we count the hours of the town-clock a procedure which would indicate his stupidity, if he could nc count otherwise, or if he could discover only at his fingers ends that five and three make eight, or rather it would indicat a caprice if he knew these short methods and did not wish to us them or to allow us to use them. He would be also like a ma who wished us not to employ axioms and theorems alread demonstrated, claiming that we must always reduce all reasoning to first principles in which is seen the immediate connectio of the ideas upon which in reality these mediate theorem depend.

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[1] *Cf. Difficultates quædam logicæ*, Gerhardt, 7, 211–217, Erdmann, 101–104; Leibnitz's letter to Bourguet, March 22, 1714, G. 3, 569–70, E. 723 b. youthful demonstration referred to in this letter is found in the *Disatio de Arte Combinatoria*, 1666, Problem II., § VI., G. 4, 46 *sq.*, E. 13 b. Dutens, 2, Pt. I., 352 *sq.*, and is Leibnitz's most thorough and elaborate tment of the moods and figures of the syllogism. — Tr.

After having explained the use of the forms of logic in th way in which I think it should be understood, I come to you considerations; and I do not see, as you wish, sir, that th syllogism serves merely to exhibit the connection of proofs *in* *single example.* To say that the mind always sees easily th conclusions, is a statement which will not be found true; fc we sometimes see some (at least in the reasonings of anothe where there is room for doubt at first so long as their demonstration is not seen. Ordinarily, we use examples to justif conclusions, but this method is not always sufficiently sur hough there is an art of choosing examples which would not found true if the conclusions were not valid. I do not ieve it would be permitted in well-governed schools *to deny hout any shame* the manifest agreement of ideas, and it does appear to me that we employ the syllogism to show them. least this is not its unique and principal use. You will find ener than you think (in examining the paralogisms of hors) that they have sinned against the rules of logic, and ave myself found by experience sometimes in discussion, n by writing, with persons of good faith, that we began to understood only when we argued in form in order to disen- gle a chaos of reasonings. It would without doubt be ridic- us to wish to argue after the scholastic fashion in important liberations, because of the importunate and embarrassing plixities of this form of reasoning, and because it is like inting on the fingers. But yet it is only too true that in the st important deliberations regarding life, the state, salva- n, men allow themselves to be dazzled often by the weight authority, by the gleam of eloquence, by examples badly plied, by enthymemes falsely supposing the evidence of that ich they suppress, and even by faulty conclusions; so that a ere logic, but of another turn than that of the School, would only too necessary for them, among other things, to deter- ne upon which side is the greatest probability. For the t, the fact that the common herd of men ignore artificial ic, and that they do not cease thereby to reason well and netimes better than the class practised in logic, this fact ves not its inutility any more than it would prove the tility of artificial arithmetic, because we see that some per- is count well on ordinary occasions without having learned read or write and without knowing how to handle the pen or tokens as far as to rectify the errors of another who has rned to calculate, but who may be neglectful or confused in characters and signs. It is true that syllogisms also may ome sophistical, but their own laws serve to recognize them; d syllogisms do not convert or indeed conquer always; but s is because the abuse of distinctions and of badly understood ms renders their use prolix until it becomes insupportable, it must be driven to extremities.

It remains for me here only to consider and to supplement your argument, employed as an example of clear reasoning without the form of the logicians: *God punishes man* (an assumed fact); *God punishes justly the one he punishes* (a truth of reason which may be regarded as demonstrated); therefore *God punishes man justly* (a syllogistic conclusion extended asyllogistically *a recto ad obliquum*); therefore *man is justly punished* (an inversion of relation, but which is set aside because of its evidence); therefore *man is guilty* (an enthymeme, in which is suppressed this proposition which in reality is only a definition: he who is punished justly is *guilty*); therefore *man could have done differently* (a suppression of this proposition he who is guilty could have done differently); therefore *man was free* (a further suppression: he who could have done differently was free); therefore (by the definition of *freedom*) *he had the power of self-determination;* which was to be proved. Regarding which I remark further that this *therefore* itself includes in reality both the unexpressed proposition (that he who is *free* has the power of self-determination) and is useful in avoiding the repetition of terms. And in this sense nothing would be omitted, and the argument in this view might pass as complete. You see that this reasoning is a *series of syllogisms* entirely in accord with logic; for I do not now wish to consider the matter of this reasoning, wherein there might perhaps be some remarks to make or some explanations to demand. For example, when a man cannot do differently, there are some cases in which he might be guilty before God, as if he were very glad to be unable to aid his neighbor in order to have an excuse. To conclude, I admit that the scholastic form of arguing is ordinarily inconvenient, insufficient, badly managed, but I say at the same time that nothing would be more important than the art of arguing in form according to true logic, *i.e.* fully as to matter and clearly as to the order and force of the conclusions, whether self-evident or predemonstrated.

§ 5. *Ph.* I thought that the syllogism would be still less useful, or rather of absolutely no use in probabilities, because it pushes only a single *topical* argument.[1] But I see now that

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[1] Aristotle, *Topics*, I., 1, 100^a 27 *sq.*, designates the "topical argument" as ὁ διαλεκτικὸς συλλογισμός, or ὁ ἐξ ἐνδόξων συλλογιζόμενος, *i.e.* the dialectic syllogism, or the syllogism which reasons from the probable in distinction from ἀπόδειξις, or the proof resting upon and leading back to first and necessary

nust always furnish solid proof of what is certain in the
ical argument itself, *i.e.* the probability therein found, and
t the force of the conclusion consists in the form. § 6. But
yllogisms serve only in judging, I doubt whether they are
able of use in invention, *i.e.* in finding proofs and making
v discoveries. For example, I do not think that the dis-
ery of the 47th proposition of the first book of Euclid is due
he rules of ordinary logic, for we first know it and then are
e to prove it in syllogistic form.

Th. Comprising under syllogisms also the series of syllo-
ms and everything which I call formal argumentation, we
y say that knowledge, not self-evident, is acquired by infer-
es which are valid only when they have their due form. In
demonstration of the said proposition which makes the
are of the hypothenuse equal to the squares of the two
es, we divide the large square into parts and likewise the
o small ones, and we find that the parts of the two small
ares may all be found in the large one and neither more nor
s. This is the proof of equality in form, and the equality
the parts is also proved by arguments in valid form. The
lysis of the ancients was, according to Pappus, to take what
asked and to draw therefrom conclusions until they come to
nething given or known. I have remarked that for this
ult the proposition must be reciprocal in order that the
thetic demonstration may return in the contrary direction
the paths of analysis, but it is always a drawing of conclu-
ns. It is well, however, to remark here that in astronomical
physical hypotheses the return does not take place; but in
e manner success does not demonstrate the truth of the
pothesis. It is true it renders it probable, but as this proba-
ity appears to violate the rule of logic which teaches that
e true may be drawn from the false, it will be said that
gical rules will not have entire sway in probable questions.
eply that it is possible for the true to be concluded from the

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ths. *Cf.* also *Topics*, VIII., 11, 162^a 15, where he calls the συλλογισμὸς
λεκτικός an ἐπιχείρημα or attempted proof, and the συλλογισμὸς ἀποδεικτικός a
οσόφημα or demonstration. On the whole subject, *cf.* Zeller, *Philos. d.*
iech., II., 2 [Vol. 4], 242 *sq.*, 3d ed., 1879; Prantl, *Gesch. d. Logik*, 1, 95 *sq.*;
llace, *Outlines of the Philos. of Aristotle*, § 23, pp. 47–48. *Cf.* also, *New*
says, Bk. II., chap. 21, § 66, Th. (2), *ante*, p. 214, note 1; Bk. IV., chap. 2,
4, Th., *ante*, p. 418, note 4. — Tr.

false, but it is not always probable, especially when a simpl hypothesis gives a reason for many truths, a thing which i rare and difficult to find. We might say with Cardan,[1] that th logic of the probable has other consequences than the logic o the necessary truths. But the probability itself of these conclusions must be demonstrated by the conclusions of the logi of the necessary truths.

§ 7. *Ph.* You appear to apologize for common logic, but see clearly that what you bring forward belongs to a mor sublime logic, to which the common is only what the alphabe is to scholarship: a fact which makes me remember a passag of the judicious Hooker, who in his book entitled "Ecclesiastical Polity," Book I., § 6, thinks that if we could furnish *the tru helps of knowledge and of the art of reasoning*, which in this ag passing as enlightened are not much known and for whic people put themselves to very little trouble, there would be a much difference as regards maturity of judgment between me who would make use of them and what men now are, as betwee the men of the present and imbeciles.[2] I wish that our conference may give occasion to some to make a discovery of these *true helps of the art* of which this great man who had so penetrating a mind speaks. They will not be the imitators who like the cattle follow the beaten track (*imitatorum servum pecus*).[3]

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[1] Girolamo Cardano, 1501–1576, an Italian physician, mathematician, and philosopher, whose complete works appeared at Lyons, 1663, 10 vols., fol., and an account of whose philosophy will be found in Stöckl, *Gesch. d. Philos. d Mittelalters*, III. [Vol. 4], 452–458. — Tr.

[2] Richard Hooker, 1553–1600, attempted, in his *Laws of Ecclesiastica Polity*, to defend the Episcopal form of government of the Church of England, as established by the Protestant sovereign and Parliaments, against th attacks of the Presbyterians. To this end he gives in the two first books o his work an exposition of the fundamental principles by which the dispute question should be decided, especially of the nature of law in general, as a philosophical basis for the rest of his discussion. It is this portion of hi work that gives it its permanent place and value in English literature an philosophy.

The passage here referred to by Locke and Leibnitz runs thus, *Eccles Pol.*, Bk. I., chap. 6, § 3, *Works*, ed. Isaac Walton, Oxford, Univ. Press, 1841 2 vols., 8vo, Vol. 1, p. 164 : "Wherefore if afterwards there might be adde the right helps of true art and learning (which helps, I must plainly confess this age of the world, carrying the name of a learned age, doth neither muc know nor greatly regard), there would undoubtedly be almost as great difference in maturity of judgment between men therewith inured, and tha which men now are, as between men that are now and innocents." — Tr.

[3] *Cf.* Horace, *Epist.*, 1, 19, 19. — Tr.

I dare say there are in this age some persons of such ength of judgment and of such large extent of mind, that y could discover new paths for the advance of knowledge, hey would take the trouble to turn their thoughts in that ection.

Th. You have well remarked, sir, with the late Mr. Hooker, t the world troubles itself but little about this; otherwise hink there are and have been persons capable of succeed- therein. We must admit, however, that now we have at helps both on the side of mathematics and of philoso-, in which the Essay concerning Human Understanding your excellent friend is not the least. We shall see if may not be able to profit therefrom.

8. *Ph.* I must further tell you, sir, that I have believed that re was a visible mistake in the rules of the syllogism; but e we have conferred together you have made me hesitate. ill, however, set before you my difficulty. It is stated that *syllogistic reasoning can be conclusive unless it contains at least universal proposition.*[1] But it seems that there are in the logism only particular things, which are the immediate ect of our reasonings and knowledge; they revolve only ut the agreement or disagreement of ideas, each of which only a particular existence and represents only an individ- thing.

Th. As far as you conceive the similarity of things you con- ve something more, and the universality consists only in t. Yet you will never propose to me any one of our argu- nts without therein employing the universal truths. It is, vever, well to remark that (as far as form is concerned) the ticular propositions are comprised within the universals. although it is true that there is only a single St. Peter the apostle, we may nevertheless say that whoever was St. Pet the apostle denied his master. Thus this syllogism: St. Pet denied his master, St. Peter was a disciple, therefore son disciple denied his master (although it has only particul propositions), is considered to have them as universal affirm tives, and the mood will be *Darapti* of the third figure.[1]

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[1] Locke's sensistic realism appears in sharp outlines in the present passage its immediate context; *cf.* further, Locke, *Philos. Wks.*, Vol. 2, pp. 295– He maintains the existence, and consequently the knowledge, of the par- lar and individual only, and that our reasoning, which relates to the ement or disagreement of things, must accordingly, in order to hit the k, confine itself to the particular. Leibnitz argues, on the other hand, our knowledge of things, while beginning with the particular in the e-act, does not rest there, but through thought, especially through the ium of the linguistic form of our mental creation, gives to the individual particular at once the character of universality. With Locke the ele- t of universality is accidental; with Leibnitz it is essential. — Tr.

Ph. I wished also to say to you that it appeared to me bett to transpose the premises of the syllogisms and to say: All is B, All B is C, therefore All A is C, than to say: All B is All A is B, therefore All A is C. But it seems from what yo have said that they do not differ, and that both are counted one and the same mood. It is always true, as you hav remarked, that the disposition different from the common better adapted to making a chain of several syllogisms.

Th. I am wholly of your opinion. It seems, however, th the belief has been that it was more didactic to begin wit universal propositions like the majors in the first and secon figures; and there are indeed orators who have this custom But the connection appears better as you propose. I hav before remarked that Aristotle may have had a particula reason for the common disposition. For instead of saying is B, he was wont to say B is in A. And with this method o statement, the connection itself which you demand will aris for him in the received disposition. For, instead of saying is C, A is B, therefore A is C, he will state it thus: C is in B B is in A, therefore C is in A. For example, instead of saying *The rectangle is isogon* (or has equal angles), *the square is rectangle*, therefore *the square is isogon*, Aristotle, without transposing the propositions, will preserve the middle place to th middle term by this method of stating the propositions, whic reverses the terms, and will say: *The isogon is in the rectangle the rectangle is in the square*, therefore *the isogon is in the square* And this mode of statement is not to be despised, for in realit

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[1] Peter being the middle term, and disciple the subject of the conclusion the minor premise must be converted, by which process the universal affirma tive, "St. Peter was a disciple," becomes the particular affirmative, "Som disciple was St. Peter," from which the particular conclusion, "Some discipl denied his master," immediately follows. The mood Darapti of the thir figure thus becomes the mood Darii of the first. The universality of th premises consists in the fact that Peter constitutes the entire class to whic he belongs. *Cf.* Hamilton, *Logic*, Boston, 1873, pp. 314–315. — Tr.

predicate is in the subject, or rather the idea of the predi-
e is included in the idea of the subject. For example, the
gon is in the rectangle, for the *rectangle* is the figure all of
ose right angles are equal to each other, therefore in the
a of the rectangle is the idea of a figure all of whose angles
equals, which is the idea of the isogon. The common mode
statement regards rather individuals, but that of Aristotle
as or universals. For in saying, *every man is an animal*, I
an to say that all men are included in all animals; but I
an at the same time that the idea of animal is included in
idea of man. Animal includes more individuals than man,
man includes more ideas or more formalities;[1] the one has
re examples, the other more degrees of reality; the one more
ension, the other more intension. It may also be truly said
t the entire syllogistic doctrine may be demonstrated by
t *de continente et contento*, the containing and the contained,
ich is different from that of the whole and the part; for the
ole always exceeds the part, but the containing and the
tained are sometimes equal, as is the case in reciprocal
positions.[2]

§ 9. *Ph.* I begin to form for myself a wholly different idea
logic from that I formerly had. I regarded it as a scholar's
ersion, but I now see that, in the way you understand it, it
like a universal mathematics. Would to God that it might
sh on to something more than it yet is, in order that we

I.e. essences. "The *formality* of the vow lies in the promise made to
l." — Stillingfleet. — Tr.

Leibnitz's thought, as Schaarschmidt says, is that sometimes the princi-
, what is predicable of the whole is predicable of the parts — *ab universali*
particulare consequentia valet — is not applicable, as in cases where the
cepts found in the conclusion are coördinate rather than subordinate,
coincident or identical in extension. In such cases the coördination or
ncidence of the concepts — *principium identitatis* — might be adduced as a
damental logical principle. To avoid this, Leibnitz proposes the principle
continente et contento, in which in a certain sense is given the higher
ty of subordination and identity, *i.e.* the subject may always be thought
as contained in the predicate, although coincident with it in extension.
principle, however, necessarily considers "the containing" as more ex-
ded than the "contained." Cases such as Leibnitz here refers to, in which
coördination or agreement of terms is such as to make them identical —
nportant cases" "for the most part strangely overlooked" by logicians
vons, *Lessons in Logic*, p. 124, new ed., 1880) — are discussed by Jevons in
little work entitled *The Substitution of Similars*, London, Macmillan & Co.,
9. — Tr.

might be able to find thereby *these true helps of reason* of whi Hooker spoke, which would raise men far above their prese condition. Reason is a faculty which so much the more needs as its *extent* is quite limited and as it fails us in many instanc (1) Because often ideas themselves fail us. § 10. Then (2) th are often obscure and imperfect; whilst where they are cle (and distinct), as in *numbers*, we find no insurmountable di culties, and fall into no contradiction. § 11. (3) Often al the difficulty comes from the fact that mediate ideas are wan ing. You know that before *algebra*, that great instrument a noteworthy proof of human sagacity, was discovered, m regarded with amazement many demonstrations of the ancie mathematicians. § 12. It also happens (4) that the mind buil upon false principles, which may entangle it in difficulti where the reason is more involved and very far from cleari them up. § 13. Finally (5), terms whose meaning is uncerta embarrass the reason.

Th. I do not know whether we so much lack *ideas* as y think, that is to say, *distinct ideas*. As for *confused ideas*, rather *images*, or, if you prefer, *impressions*, as colors, taste etc., which are a resultant of many little ideas distinct themselves, but of which we are not distinctly conscious, lack an infinite number of them suitable to other creatur rather than to ourselves. But these impressions also ser rather to give rise to the *instincts* and to establish the observ tions of experience than to furnish matter to the reason, exce so far as they are accompanied by distinct perceptions. It then principally the defect of the knowledge we have of the distinct ideas, concealed within the confused, that stops u and even when all is distinctly exposed to our senses or to ou mind, the multitude of things that must be considered som times perplexes us. For example, when there is a pile of on thousand cannon-balls before our eyes, it is plain that in orde properly to conceive the number and properties of this mult tude, it is very useful to arrange them in figures as is done i the magazines in order to have distinct ideas of them and t fix them, indeed, so that we may be spared the trouble c counting them more than once. It is the multitude of consid erations also which causes some very great difficulties in th science of numbers themselves; for short methods are sough sometimes we do not know whether nature has them within folds for the case in question. For example, what is arently simpler than the notion of the *prime number? i.e.* a ɔle number indivisible by every other except unity and lf. Yet we seek also a positive and easy sign in order to ɔgnize them certainly without trying all the prime divisors ; than the square root of the given prime. There are a nber of signs which make known without much calculation t a given number is not prime, but we ask for one which is y and which makes known certainly that it is prime when s so. This it is which also makes algebra as yet so imper- t, although nothing is better known than the ideas of which nakes use, since they signify only numbers in general; for the ɔlic has not yet the means of extracting the irrational roots ıny equation beyond the fourth degree[1] (excepting in a very ıited case), and the methods which Diophant,[2] Scipio Ferreus,[3]

In Leibnitz's day, as the text states, equations of the 2d, 3d, and 4th rees were reduced to pure equations, but the reduction of equations of ıer degrees than the 4th remained an unsolved problem, on which mathe- icians spent much labor, until Niels Henrik Abel, 1802–1829, a Norwegian hematician of great ability and acuteness, demonstrated (1824) that the ıtic equation and *a fortiori* the general equation of any order higher than , is incapable of solution by radicals. *Cf.* Abel, *Démonstration de l'im- sibilité de la résolution algébrique des équations générales qui passent le trième degré*, in *Œuvres complètes*, ed. by Holmboe, 2 vols., Christiania,), Vol. 1, pp. 5–24, and in Crelle, "Journ. f. Math.," 1826, Vol. 1, pp. 34. — Tr.

Diophantus, c. 325–c. 409, a celebrated Greek mathematician of the xandrian school, gave, in his *Arithmeticorum lib. VI.*, a method for the ıtion of equations of the 1st and 2d degrees. The Ms. of his *Arithmetic* ; discovered in 1460 in the Vatican Library by the astronomer Regiomon- us, 1436–1476, and was published in a Latin trans., without the original, by ıander, in 1575. The Greek text, with a more complete trans., and a com- ıtary by Bachet de Merzeriac, whose skill in indeterminate analysis ecially fitted him for the task, appeared in 1621. The best ed., based upon t of Bachet, including the Greek text with Latin trans., is that by Pierre mat, 1601–1665, the celebrated French mathematician, who supplemented commentary of Bachet by valuable notes of his own. It is found in Vol. p. 65–341 of Fermat, *Opera Mathematica*, 2 vols., fol., Tolosæ, 1670, 1679. -R.

Scipione del Ferro or Ferri, c. 1465–1525, an Italian mathematician, taught hmetic and geometry at Bologna from 1496 till his death. About 1505 he overed the solution of a particular case of cubic equations, which he did publish, but communicated to his favorite pupil Antonio del Fiore, who in 15 challenged Tartaglia to a trial of skill in resolving algebraical problems uiring a knowledge of this rule. Tartaglia in 1630 had already solved two es of cubic equations, and before the time for the contest came solved two and Lewis Ferrari[1] used respectively for the second, thir and fourth degrees in order to reduce them to the first, in order to reduce an affected equation to a pure, are whol different from each other, *i.e.* that which is used for one degr differs a degree from that used for another. For the secon degree, or the quadratic equation, is reduced to the first merely eliminating the second term. The third degree, or t cubic equation, has been solved, because in separating t unknown quantity into parts there happily arises from the an equation of the second degree. And in the fourth degre or the biquadratics, something is added to the two sides of t equation to render it capable of extraction on both sides, a then it is happily found that to obtain this result an equati of the third degree only is needed. But all this is only a mi ture of good luck or chance with art or method. And in tryi it on these last two degrees we knew not whether it would successful. Further still, another artifice is necessary to su cess in the fifth or sixth degree, which are the sursolids bicubes. And although Descartes believed that the method used in the fourth, conceiving the equation as produced by tw other quadratic equations (but which cannot at bottom gi more than that of Lewis Ferrari), would succeed also in t sixth, it is not found to be so. This difficulty shows that eve the clearest and most distinct ideas do not always give us a we ask for and all that may be drawn from them. And th makes us also judge that algebra is very far from being the a

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more. He thus easily won the victory, as his problems could be solved on by one or the other of his own three rules which were unknown to Fiore, a not by the remaining rule which was the only one known to Fiore. Tartaglia discoveries were improved and published by Cardan in connection with h own in 1545, as a supplement to a treatise on arithmetic and algebra pu lished in 1539. *Cf.* Cardan, *Opera omnia*, Vol. 4, pp. 249–264. On Ferro, Libri, *Hist. des Sciences Math. en Italie*, Vol. 3, pp. 148–151; Montucla, *Hi* *des Math.*, Vol. 1, p. 479, ed. 1758, Vol. 1, p. 591, ed. 1799–1802. — Tr.

[1] Ludovico or Luigi Ferrari, 1522–1562, or 1565, an Italian mathematician, pupil of Cardano (*cf. ante*, p. 566, note 1), and Professor of Mathematics at Mil and at the University of Bologna, discovered the demonstration of the formu for the resolution of equations of the 3d degree, sent by Tartaglia, c. 1500–155 to Cardan under the form of an enigma, and shortly after this discovery solv equations of the 4th degree. For an account of his demonstration, *cf.* Carda *Ars magna*, 1545, chap. 15. De cubo et quadratis æqualibus numero, § *Opera omnia*, 10 vols., Lugduni, 1663, Vol. 4, p. 254. On Ferrari, *cf.* Lib *Hist. des Sciences Math. en Italie*, Vol. 3, pp. 180, 181; Montucla, *Hist. d* *Math.*, Vol. 1, pp. 484, 485, ed. 1758, Vol. 1, pp. 596, 597, ed. 1799–1802. — Tr.

invention, since it needs a more general art; and we may , indeed, that the art of signs (*Specieuse*) in general, *i.e.* the of characters, is a marvellous means of assistance, since it s the imagination. It will not be doubted in view of the thmetic of Diophant and the geometrical books of Apollonius l Pappus that the ancients possessed it to a certain extent. eta[1] has given it more extension by expressing not only what sked for, but also the given numbers, by general characters, ng in calculating what Euclid already did in reasoning, and scartes has extended the application of this calculus to metry, indicating lines by equations. Nevertheless, even er the discovery of our modern algebra, Bouillaud[2] (Ismael llialdus), no doubt an excellent geometer, whom, moreover, new in Paris, regarded only with wonder the demonstrations Archimedes upon the spiral, and could not understand how s great man had thought of employing the tangent of this e as the dimension of the circle. Father Gregory of St. ncent[3] appears to have divined it, thinking that it was attned by the parallelism of the spiral and the parabola. But s method is only a particular one, whilst the new calculus infinitesimals[4] which proceeds by the method of the differes which I have thought of and successfully shared with the blic, gives a general one, wherein this discovery concerning

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Cf. ante, p. 468, note 1. — Tr.

Ismael Boulliau, 1605–1694, a French mathematician and astronomer, who the first to give, in his *Ad astronomos monita duo*, 1657, a plausible exnation of the change in the light of some stars by attributing to them an al revolution which shows successively their obscure and luminous parts. was the author of several works, among which is the *De lineis spiralibus onstrationes*, 1657, which Leibnitz, perhaps, had in mind here. — Tr.

Grégoire de Saint-Vincent, 1584–1667, a Flemish geometer who was much upied with the problem of the quadrature of the circle, and whose prinl work is the *Opus geometricum quadraturæ circuli et sectionum coni*, 7. — Tr.

For Leibnitz's account of his discovery of the "calculus of infinitesimals," his *Historia et origo calculi differentialis*, Gerhardt, *Leibniz. math. Schrift.*, 1 [Vol. 5], 392–410; also his letter, April 18, 1716, to the Countess Kielansegge, Dutens, *Leibnit. op. om.*, 3, 456–461. For Leibnitz's various writs on the subject, *cf.* Gerhardt, *op. cit.*, II., 1 [Vol. 5], 141–418; Dutens, *op. cit.*, . 3, passim. Dutens, Vol. 3, contains also much material concerning the troversy between Leibnitz and Newton regarding the discovery of the ulus. Further accounts are given in Guhrauer, *Leibnitz, Eine Biographie*, 86–320, Jaucourt, *Historia vitæ Leibnitii*, and Montucla, *Hist. d. Math.*, . 2 (both in Dutens, *op. cit.* Vol. 3, pp. xii–xl, xli–lv), and in *Encyclop. t.*, 9th ed., Vol. 13, Article, "Infinitesimal Calculus." — Tr.

the spiral is mere play and a sample of the easiest, like near
all we have before discovered in the matter of the dimensio
of curves. The reason of the advantage of this new calcul
is, moreover, that it relieves the imagination in the problem
which Descartes excluded from his geometry under the pr
text that they most frequently lead to mechanics, but
bottom because they did not agree with his calculus. A
for errors arising from ambiguous terms, it is our busine
to avoid them.

Ph. There is also a case in which reasoning cannot
applied, but in which also there is no need of it and in whic
sight is worth more than reasoning. It is in *intuitive kno*
edge, where the connection of ideas and truths is immediatel
seen. Such is the knowledge of indubitable maxims, and I a
tempted to believe that this is the degree of evidence whic
the angels have at present, and which the spirits of just me
made perfect will have in a *future state* regarding a thousan
things which now escape our knowledge. § 15. But demon
stration, based upon mediate ideas, gives a *reasoned knowledg*
This is because the connection of the mediate idea with th
extremes is necessary and is seen by a *juxtaposition* of evidenc
similar to that of a yard-stick applied now to one cloth and no
to another to show that they are equal. § 16. But if the co
nection is only probable, the judgment gives only an *opinion.*

Th. God alone has the advantage of having only intuiti
knowledge. But very happy souls, however detached they a
from these material bodies, and the genii themselves, howev
exalted they are, although they have a knowledge without co
parison more intuitive than ours, and often see at a glance wh
we discover only by the force of consequences after having e
ployed time and labor, must likewise find difficulties in their pa
without which they would not have the pleasure of making di
coveries, which pleasure is one of the greatest. And we mu
always admit that there will be an infinite number of trut
concealed from them either wholly or for a time, whereto th
must attain by force of consequences and by demonstration
even frequently by conjecture.

Ph. [These genii then are only animals more perfect th
we; it is just as if you said with the emperor of the moon:
is all as here.]

Th. I will say so, not entirely, but in regard *to the ground* of ngs, for the modes and degrees of perfection vary infinitely. anwhile the ground is everywhere the same, a *maxim* which *undamental* with me and reigns in all my philosophy. I conve things unknown or confusedly known only after the manner those which are distinctly known to us; a procedure which kes philosophy very easy, and I believe indeed that it must so. But if this philosophy is simplest in its ground, it is o the richest in its modes, because nature may vary them initely, as indeed she has done with as much abundance, ler, and ornateness as it is possible to imagine. This is the ison why I believe there is no genius however sublime who s not an infinite number of them above him. Yet although are very inferior to so many intelligent beings, we have the vantage of not being visibly controlled upon this globe where hold indisputably the first rank; and with all the ignorance which we are immersed we have always the pleasure of seeing thing which surpasses us. And if we were vain we might lge as Cæsar, who preferred to be first in a country town her than second in Rome. For the rest, I speak here only the natural knowledge of these spirits and not of the *beatific ion*,[1] or of the supernatural light that God is pleased to give em.

The term "beatific vision" (*visio beatifica*) denotes in theological and gious thought the direct and immediate or intuitive vision of God enjoyed the saints and angels in heaven and supposed to constitute their essential s. The philosophical significance of the idea as historically developed, h respect both to its speculative and practical uses, lies in the fact that the *o beatifica* was regarded as the sole means of obtaining absolute truth and realizing absolute blessedness. The idea thus involved more or less exitly a species of knowledge supernaturally mediated in some unknown and xplained way, but considered, because of the method of its mediation, as superior in certainty and completeness to any knowledge that finite beings ld attain through the unaided action of their own intellectual powers— orief, as the very perfection of knowledge attainable by such beings.

he idea originated in Plato's conception of an immediate intuition, going ond rational thought, of the pure forms of reality or the Ideas. Transned by Philo and Plotinus into their ecstatic intuition, or that identifica1 of the human with the Divine in which all consciousness of individual sonality is lost; combined by Clement and Origen, in view of certain exssions in the Pauline epistles, with the thought of a personality in union h whom the self-consciousness of the individual is preserved; and still ther developed by Augustine, as the principle of the absolute and immete certainty of inner experience or consciousness involving within itself idea of God as the absolute personality and the sum and essence of all

§ 19. *Ph.* As each one makes use of reasoning either with regard to himself or with reference to another, it will not be useless to make some reflections upon *four sorts of argument* which men are wont to use in order to draw others to thei opinions or at least so to keep them in awe as to prevent them from contradicting. The first argument may be called *argumentum ad vercundiam,* when we cite the opinion of those who have acquired authority by their knowledge, rank, power or otherwise; for when another does not yield to it promptly he is liable to be censured as full of vanity and even to be charged with insolence. § 20. There is also 2) *argumentum ad ignorantiam, i. e.* to demand that the opponent admit the proof or assign a better. § 21. There is 3) *argumentum ad hominem,* when we press a man by what he has himself said § 22. Finally, there is 4) *argumentum ad judicium,* which consists in employing proofs drawn from some one of the source of knowledge or probability. This is the only one of all which advances and instructs us; for if from respect I dare not contradict, or if I have nothing better to say, or if I contradic myself, it does not follow that you are right. I may be modest ignorant, deceived, and you prove yourself to be mistaken alsc

Th. It is doubtless necessary to make a difference betweer what is proper to be said and what is truly to be believed. Ye as the majority of truths may be boldly maintained, there i some prejudice against an opinion that it is necessary to conceal. The argument *ad ignorantiam* is valid in cases of pre sumption where it is reasonable to hold to an opinion till th contrary is proved. The argument *ad hominem* has this effect that it shows that one or the other assertion is false and tha

truth, this conception passed into the philosophical and religious thinkin and life of the Christian Church, and became especially prominent in th teachings of the Mediæval Mystics. On this historical development *cf.* Win delband, *Hist. of Philos.*, trans. by Tufts, pp. 119 *sq.*, 227 *sq.*, 249 *sq.*, 276 *sq* Zeller, *Philos. d. Griech.*, III., 2 [Vol. 6], 413 *sq.*, 611 *sq.*, 854, note 4, 3d ed 1881; Benn, *Greek Philosophers*, 2, 311 *sq.*

In a modified form this intuition of divine things became what the Churc fathers and the theological and philosophical writers of the Middle Age terme the *lumen gratiæ,* "the light of grace," the supernatural light given throug divine inspiration, in opposition to the *lumen naturale* or "natural light," th rational knowledge given by nature to all men as such. *Cf. New Essay* Bk. I., chap. 1, § 21, Th., *ante*, p. 71; Gerhardt, *Leibniz. philos. Schrift.*, 494 *sq.*, 503 *sq.;* Hamilton's Reid, Note A, § V., IV., 1, note †, Vol. 2, p. 76 § VI., 20–22, 25–26, pp. 776–778, 54, p. 785, 8th ed., 1880. — Tr.

ɔ opponent is deceived whatever way he takes it. We might ıng yet other arguments which are used, for example the e we might call *ad vertiginem*, when we reason thus: if this ɔof is not received we have no means of attaining certainty on the point in question, which we take as an absurdity. ıis argument is valid in certain cases, as if any one wished deny primitive and immediate truths, for example, that anying can be and not be at the same time, or that we ourselves ist, for if he were right there would be no means of knowing ything whatever. But when certain principles are produced d we wish to maintain them because otherwise the entire stem of some received doctrine would fall, the argument is t decisive; for we must distinguish between what is necesry to maintain our knowledge and between what serves as a ındation for our received doctrines or practices. Use was metimes made among jurisconsults of probable reasoning in der to justify the condemnation or torture of pretended sorrers upon the deposition of others accused of the same crime, r it was said: if this argument falls, how shall we convict em? And sometimes in a criminal case certain authors ıintain that in the facts where conviction is more difficult, ɔre slender proofs may pass as sufficient. But this is not a ason. It proves only that we must employ more care, and t that we must believe more thoughtlessly, except in the se of extremely dangerous crimes, as, for example, in the ıtter of high treason, where this consideration has weight, t to condemn a man, but to prevent him from doing harm; that there may be a mean, not between *guilty and not guilty*, t between *condemnation* and *banishment* in the judgments, ıere law and custom admit it. Use has been made of a similar gument in Germany for some time in order to give color to e coining of bad money; for (they say) if we must keep to e prescribed rules, we cannot coin it without loss. We must allowed then to debase its alloy. But besides the fact that must diminish the weight only and not the alloy or superription the better to obviate frauds, we suppose a practice cessary which is not so; for no command of heaven nor any ıman law exists obliging those who have no mine nor occaɔn to have silver in bars to coin money; and to make money t of money is a bad practice which naturally carries deterioration with it. But how (they say) shall we exercise ou *regale* in coining it? The reply is easy. Content yourselve with coining a little from good silver, even at a small loss, i you think its coinage a matter of importance to yourselves since you have no need nor right to flood the world wit debased small coin.

§ 23. *Ph.* After having said a word concerning the relatio of our reason to other men, let us add something about it relation to God, which makes us distinguish between what i *contrary to reason* and what is *above reason.* Of the first clas is everything which is incompatible with our clear and distinct ideas; of the second is every thought whose truth o probability evidently cannot be deduced from sensation o reflection by the aid of reason.[1] Thus the existence of mor than one God is *contrary* to reason, and the resurrection of th dead is *above* reason.

Th. I find something to say regarding your definition o that which is *above reason*, at least if you connect it with th received use of this phrase; for it seems to me that from the manner in which this definition is couched, it goes too far i one direction and not far enough in the other; and if we follow it, all that of which we are ignorant and which in ou present condition we are unable to know, would be abov reason, for example, that a given fixed star is greater o less than the sun; again, that Vesuvius will send out fire i such a year; these are facts the knowledge of which is beyon us, not because they are above reason, but because they ar beyond our senses; for we could very well judge of them, i we had more perfect organs or more information about th circumstances. There are also difficulties which are beyon our present faculty, but not beyond reason as a whole; fo example, there is no astronomer here below who can calculat the detail of an eclipse in the space of a *pater* and withou taking the pen in hand, yet there are perhaps genii to whom that would be mere play. Thus all things might be mad known or practicable by the aid of reason, by supposing mor information concerning the facts, more perfect organs, and more elevated mind.

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[1] *Cf.* Locke, *Exam. of Malebranche*, § 53, *Philos. Wks.*, Vol. 2, p. 455 (Bohn' ed.). — Tr.

Ph. This objection ceases if I understand my definition not
ly of our sensation or reflection, but also of that of every
her possible created spirit.

Th. If you take it so, you are right. But the other diffi-
lty remains, viz.: that there will be nothing above reason
cording to our definition, because God will always be able
give the means of apprehending by sensation and reflection
y truth whatever; as in reality the greatest mysteries be-
me known to us by the testimony of God which we recognize
the *motives of credibility*, upon which our religion is based.
nd these motives undoubtedly depend upon sensation and
flection. The question then seems to be not whether the
istence of a fact or the truth of a proposition can be deduced
om the principles which reason uses, *i.e.* from sensation and
flection, or rather the external and internal sense, but whether
created spirit is capable of knowing the how of this fact, or
e *a priori reason* of this truth; so that we may say that
hat is *beyond reason* may indeed be *apprehended*, but it can-
ot be *comprehended* by the means and forces of created reason,
wever great and exalted it be. It is reserved to God alone
understand it, as it belongs to him alone to assert it.[1]

Ph. This consideration appears to me a good one, and it is thus that I wish my definition to be understood. This sam consideration confirms me also in my present opinion that th manner of speaking which opposes reason to faith, although i has weighty authority, is improper; for it is by reason tha we verify what we must believe.[1] Faith is a firm assent, an assent, regulated as it should be, can only be given upon goo reasons. Thus he who believes without any reason for believing may be in love with his fancies, but it is not true tha he seeks the truth, nor that he renders lawful obedience to hi divine Master, who would have him make use of the facultie with which he has enriched him in order to preserve him fror error. Otherwise if he is in the good way, it is by chance and if in the bad, it is by his fault, for which he is accountabl to God.

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[1] *Cf. Théodicée*, Discours prélim., especially §§ 2, 5, 23, 56; *New Essays*,
eface, *ante*, pp. 55, 60; *Annotatiunculæ subitanæ ad Tolandi librum, De
ristianismo mysteriis carente*, 1701, Dutens, *Leibnit. op. om.*, 5, 142, 143;
hler, *Theol. d. Leibniz*, 1, 208–225; K. Fischer, *Gesch. d. n. Philos.*, Bd. II.,
ibniz, 3d ed., pp. 541–547.

According to Leibnitz, reason and faith are not absolutely opposed. Reason
ıst be capable of *apprehending* the supernatural as fact, even though in its
esent stage of development — and perhaps in all its development — it may
ver be able to *comprehend* it exhaustively. The supernatural, while it may
outside of and beyond any present or future possible finite experience, is
t then contrary to reason. In fact, to be apprehended or accepted as fact
all, it must present such intrinsic rationality as is sufficient to induce be-
f, *i.e.* it must show itself to be intrinsically possible and not contrary to
y well-established knowledge. In this sense it is not wholly above reason, —
it were, it would not at all concern us, — and may therefore become a part
the sum-total of our knowledge. The contention of both Leibnitz and
cke is, in fact, that the opposition is not between reason and faith, but
ther between reason and unfounded authority. Leibnitz rejects entirely
th belief based on blind submission to mere authority, and that ultra-
tionalism which refuses to admit the existence of anything not coming
tirely within the range of experience, particularly that experience which
sensuous and individual and excludes that which is spiritual and uni-
rsal. — Tr.

Th. I commend you strongly, sir, when you wish faith t be grounded in reason: without this why should we prefe the Bible to the Koran or to the ancient books of the Brahmins Our theologians also and other learned men have clearly recognized it, and it is this which has caused us to have such fin works concerning the truth of the Christian religion, and s many excellent proofs as have been put forward against th heathen and other unbelievers, ancient and modern. Wis persons also have always regarded as suspicious those wh have maintained that it was not necessary to trouble themselves about reasons and proofs when it was a question c belief; an impossibility in fact unless *to believe* signifies t recite or repeat or to let pass without troubling themselves, a many people do, and as indeed is the character of some nation more than others. This is the reason why, when some Aristotelian philosophers of the fifteenth or sixteenth century, whos remains were still extant a long time after (as we may judg by the letters of the late Mr. Naudé[2] and the *Naudeana*) sired to maintain two opposite truths, one philosophical, the her theological, the last Lateran Council under Leo X was ght in opposing them, as I think I have already remarked.[1] nd a dispute wholly similar was raised at Helmstädt in rmer times between Daniel Hofmann, a theologian, and orneille Martin, a philosopher, but with this difference, that e philosopher reconciled philosophy to revelation and the eologian wished to decline its use. But the Duke Julius, founder of the university, decided for the philosopher.[1] It true that in our time a person of the most exalted positio said that in a matter of faith he must put out his eyes in orde to see clearly, and Tertullian says somewhere: this is tru because it is impossible:[2] it must be believed, for it is a absurdity. But if the intention of those who explain themselves in this way is good, these expressions are always exaggerated and may do harm. St. Paul speaks more justl when he says that the wisdom of God is foolishness wit men; because men judge of things only according to thei experience, which is extremely limited, and everything no agreeing therewith appears to them an absurdity. But thi judgment is very rash, for there is indeed an infinite numbe of natural things which would pass with us as absurd, if the were told us, as the ice which was said to cover our river appeared to the king of Siam. But the order of nature itsel not being of any metaphysical necessity, is grounded only i the good pleasure of God, so that he may deviate therefron by the superior reasons of grace,[3] although he must procee therein only upon good proofs which can come only from th testimony of God himself, to which we must defer absolutel when it is duly verified.

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[1] Gerhardt reads: "car c'est par la raison que nous verifions ce que nou devons croire." Erdmann, Jacques, and Janet read: "car c'est par la raiso que nous devons croire." — TR.

[2] Gabriel Naudé, 1600–1653, a celebrated French scholar, bibliographer an librarian, who at first studied medicine and was physician to Louis XIII, bu who afterwards devoted himself entirely to literary and library work. H was the creator of the celebrated *Bibliothèque Mazarine.* His *Naudeana,* collection of anecdotes drawn from his conversations, appeared at Paris, 170 — TR.

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[1] *Cf. Théodicée*, Discours prélim., §§ 7, 8, 11. The "Aristotelian philosoers" here referred to, were divided into two schools, the Alexandrists and e Averroists, according as they followed the interpretation of Aristotle ven by Alexander of Aphrodisias, c. 200, or Averroes, 1126–1198. Both hools denied the immortality of the individual soul; the Averroists groundg their denial on, and finding a compensation for such immortality in, the ity of the intellect — the rationally active part of the soul (νοῦς) — in all en; while the Alexandrists regarded individual souls, including this rational rt, as naturally mortal.

Both schools were opposed and condemned by the Church, and the theory "the double truth" (philosophical truth having its source in natural reason, eological in a supernatural revelation), held by both schools as a shield to otect them, in the exposition and dissemination of their views, from the terference and persecution of the Church, was adjudged heretical in the ecree "Apostolici Regiminis" of the fifth Lateran Council of December 19, 12, under Leo X. This theory in the case of many of its advocates was, no ubt, the natural and "honest expression of the inner discord" resulting om the opposition of the two then prevalent authorities, Greek philosophy d religious tradition.

Chief among those who advocated this theory of "the twofold truth" as Pietro Pomponazzi, 1462–1525, an Italian physician and philosopher, in s time one of the most sagacious and subtle interpreters of Aristotle of the lexandrian school. He maintained, in his *Tractatus de immortalitate animi*, ologna, 1516, 8vo, that none of the reasons assigned for the dogma of immorlity were categorically demonstrative, and that therefore the doctrine must epend upon revelation. When accused of heresy, he stoutly asserted his inocence, saying that he taught nothing contrary to the belief of the Church, t simply expounded Aristotle, and adding that he denied as a Christian hat he affirmed as a philosopher. He attempted to discover a deeper fountion for the theory of "the twofold truth," through the recognition of the vofold nature of reason, the speculative and the practical, the former rnishing the basis of philosophy, the latter that of theology and ethics.

On the whole subject, *cf.* M. Maywald, *Die Lehre v. d. zweifachen Wahrit*, Berlin, 1871; Windelband, *Hist. of Philos.*, trans. by Tufts, pp. 318 *sq.*, 9 *sq.*, 359; Pünjer, *Gesch. d. christ. Religionsphilos.*, 1, 28–29, 37, Eng. trans., 39 *sq.*, 50–52; Stöckl, *Gesch. d. Philos. d. Mittelalters*, III [Vol. 4], 202–207, d for an account of Pomponazzi and his philosophy, *ibid.* 213–244; *cf.* also . Ferri, *La Psicologia di P. Pomponazzi*, Rome, 1877. For the decree Apostolici Regiminis," *cf. Acta Concil. Reg.*, Vol. 34, p. 333, Paris, 1644, vols., fol.; Labbé, *Concil.*, tom. 19, col. 842; Stöckl, *op. cit.*, III [Vol. 4], 6, n. 1. — Tr.

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[1] *Cf. Théodicée*, Discours prélim. § 13. On the controversy itself, extending from 1598–1601, *cf.* Pünjer, *Gesch. d. christ. Religionsphilosophie*, 1, 132-141, Eng. trans., 1, 178–190. For the fullest accounts, *cf.* G. Thomasius, *D Controversia Hofmanniana*, Erlangen, 1844, and E. Schlee (who gives th external history with complete references to the literature), *Der Streit d. Dan Hofmann ü. d. Verhältniss d. Philos. z. Theol.*, Marburg, 1862. Schaarschmid refers to E. L. Th. Henke, *Georg Calixtus u. seine Zeit*, Einleitung, p. 73 *sq.* and says that Duke Julius [Henry Julius, son of the founder of the University, and the successor of his father in the government in 1589], who ha examined the documents in the controversy and reached a decision, did rightl in protecting the philosopher against his opponents, who spread abroad th most horrible calumnies concerning him, and treated him in general ver harshly. — Tr.

[2] *Cf.* Tertullian, *De Carne Christi*, chap. 5: "Mortuus est dei filius; prorsus credibile est, quia ineptum est. Et sepultus resurrexit; certum est, quia impossibile est." Leibnitz also refers to this passage in the *Théodicée*, Discours prélim. § 50. — Tr.

[3] *Cf. ante*, p. 462, note 1. — Tr.

CHAPTER XVIII

OF FAITH AND REASON AND THEIR DISTINCT LIMITS

§ 1. *Ph.* Let us accommodate ourselves meanwhile to the
eived mode of speech, and suffer faith to be distinguished in
ertain sense from reason. It is proper that this sense be very
urately explained and the limits existing between these two
ngs be established; for uncertainty regarding these limits
s certainly produced in the world great disputes and perhaps
sed even great disorders. It is at least manifest that, until
ese have been determined, it is in vain for us to discuss, since
must employ reason in discussing faith. § 2. I find that
h sect uses reason with pleasure so long as it believes it
n derive therefrom any aid: but as soon as reason fails, they
y out: it is an article of faith, which is above reason. But
e opponent could make use of the same evasion if any one
ok it upon himself to argue against him, unless we indicate
ny that would not be permitted him in a case seemingly
rallel. I suppose that reason is here the discovery of the
rtitude or probability of propositions drawn from knowledge
hich we have acquired by the use of our natural faculties,
at is to say by sensation and by reflection; and that faith is
e assent given to a proposition based upon *revelation*, that is
say upon an extraordinary communication from God which
s made it known to man. § 3. But a man inspired of God
nnot communicate to others any new simple idea, because he
es only words or other signs which awake in us the simple
eas that custom has attached to them or their combination;
d whatever new ideas St. Paul received when he was carried
to the third heaven, all that he could say was: *they are*
ngs eye hath not seen, ear hath not heard, and which have
ver entered into the heart of man.[1] Suppose there were creat-
es in the planet Jupiter provided with six senses and that
od in a supernatural way gave to a man among us the ideas of
is sixth sense, he could not by means of words make them

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[1] 1 Cor. 2, 9. — Tr.

spring up in the minds of other men.[1] We must then dist guish between *original* and *traditional revelation.* The first an impression which God makes immediately upon the mi and to this we can fix no limits; the other comes only by ordinary means of communication and cannot give new sim ideas. § 4. It is true, however, that the truths which may discovered by reason can be communicated to us by a tra tional revelation, as if God had desired to communicate to m geometrical theorems, but this would never amount to so gr a certainty as if we had their demonstration drawn from t connection of ideas. It is also as if Noah had a more cert knowledge of the deluge than that which we have acqui from the book of Moses and as if the assurance of one who h seen that Moses actually wrote it and that he did the mirac which justify his inspiration was greater than ours. § 5. Th it is which makes it impossible for revelation to go against t clear evidence of reason, because whenever the revelation immediate and original we must know with certainty that are not deceived in attributing it to God and that we comp hend its meaning; and this evidence can never be greater th that of our intuitive knowledge; and consequently no propo tion can be received as divine revelation when it is contrad torily opposed to this immediate knowledge. Otherwise the would no longer remain any difference in the world betwe truth and falsehood, any measure of the credible and incre ble. And it is inconceivable that a thing comes from God, th beneficent author of our being, which received as true mu overturn the foundations of our knowledge and render all o faculties useless. § 6. Those who have revelation only me ately, or by tradition from mouth to mouth or by writing, ha again more need of reason to assure themselves of it. § Meanwhile it is always true that the things which are beyo what our faculties can discover are the proper matters of fait

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[1] *Cf.* Lessing's amplification of a similar thought, perhaps suggested by th passage of Leibnitz, in his Fragment: *Dass mehr als fünf Sinne für d Menschen sein können, Sämmt. Schrift*, ed. Lachmann-Maltzahn, Leipzi 1853–1857, Vol. 11, Pt. 2, p. 458. On the relation of Lessing to Leibnitz, Zimmermann, *Leibniz und Lessing, Eine Studie*, Wien, 1855; Pünjer, *Gesc d. christ. Religionsphilosophie*, 1, 421–425, Eng. trans., 1, 566–570; Pfleider *Religionsphilosophie*, 1, 143, Eng. trans., 1, 145–146; K. Fischer, *Gesch. d. Philos.*, Bd. II., Leibniz, 3d ed., pp. 617–619. — Tr.

the fall of the rebellious angels, the resurrection of the
nd. § 9. Here we must listen solely to revelation. And
en as regards probable propositions an evident revelation
ll determine us against the probability.

Th. If you take faith as that which is grounded in *the*
tives of credibility (as they are called) and detach it from
e internal grace which immediately determines the mind,
that you say, sir, is beyond dispute. It must be admitted
at there are many judgments more evident than those de-
nding upon these motives. Some are urged on by them far-
er than others, and there are indeed many persons who have
ver known them and still less considered them and who con-
quently have not even that which might pass as a *motive of*
obability. But the internal grace of the Holy Spirit imme-
tely supplies it in a supernatural way, and this it is which
oduces what the theologians properly call a divine faith.
is true that God never gives it except when the belief it
oduces is founded in reason; otherwise he would destroy
e means of knowing the truth and open the door to enthu-
sm; but it is not necessary for all who have this divine
th to know these reasons and still less to have them always
fore their eyes. Otherwise simple-minded people and idiots,
day at least, would never have the true faith, and the most
lightened would not have it when they were most in need
it, for they cannot always remember the reasons for their
lief. The question of the use of reason in theology has
en one of the questions most discussed, both between the
cinians and those who may be called Catholics in a general
nse, and between the Reformers and the Evangelicals, as
ose are named by way of preference in Germany whom many
ptly call Lutherans. I remember to have read once a Meta-
ysic of one Stegmann,[1] a Socinian (a different man from
shua Stegmann,[2] who himself wrote against them), which so

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[1] *Cf. Théodicée*, Discours prélim., § 16, where Leibnitz refers to him as
ristopher Stegmann, a Socinian. He was the youngest brother of Joachim
gmann, also a Socinian and author of many works on mathematics and
ology, who died in exile at Clausenburg in Siebenbürgen in 1632. Christo-
er wrote a work entitled *Dyas philosophica*, which is, perhaps, the "Meta-
ysic" of which Leibnitz here speaks. For further account of him, *cf.*
her, *Allgemeines Gelehrten-Lexicon*, Pt. IV., 794, Leipzig, 1750. — Tr.

[2] Joshua Stegmann, 1588–1632, a Lutheran divine, was Professor at Leipzig,
ttenberg, and Rinteln, and the author of many theological works, and of

far as I know has not yet been printed; on the other hand, c Kessler,[1] a theologian of Saxony, has written a Logic and so other philosophical treatises expressly opposed to the Socinia We may say in general, that the Socinians are too quick reject everything which is not conformed to the order nature, even when they cannot prove absolutely its impos bility. But their opponents also sometimes go too far a push mystery to the verge of contradiction; in which th injure the truth they try to defend. I was surprised to s once in the "Summa Theologiæ" of Father Honoré Fabr who otherwise was one of the most clever of his order, whi he denied in divine things (as do also some other theologian this great principle which states *that things which are identi with a third thing are identical with each other.* This is to gi

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the famous German hymn, "Ach, bleib' mit deiner Gnade" (Eng. trans. *Lyra Germanica*, 2, 120, "Abide among us with thy grace, Lord Jesus, ev more"). He was opposed to the Socinians or Photinians, and wrote agai them his *Photinianismus, h. e. Succincta Refutatio Errorum Photinianoru quinquaginta sex disputationibus breviter comprehensa*, Rinteln, 1623, 8 Frankfort, 1643. Leibnitz mentions him again in the *Théodicée*, Disco prélim., § 62. For further account of him, *cf.* Winer, *Handbuch d. theol Lit.*, 1, 354; 2, 748; Jöcher, *Allgemeines Gelehrten-Lexicon*, Pt. IV., 7 Leipzig, 1750. — Tr.

[1] Andreas Kessler, 1595–1643, a Lutheran divine, studied at Jena a Wittenberg, and was pastor at Eisfeld, Eisenach, and Coburg, where he d in consequence of a stroke of apoplexy received while preaching. He wr against the Socinians or Photinians his *Physicæ Photinianæ examen*, Eisfe 1628, Wittenberg, 1656, 8vo; *Metaphysicæ Photinianæ examen*, 3d ed., Witt berg, 1648, 8vo; *Logicæ Photinianæ examen*, 2d ed., Wittenberg, 1624, 4to, n ed. 1642, 8vo. His writings exhibit a good deal of method and exactne Leibnitz also refers to him in the *Théodicée*, Discours prélim., § 16. For f ther account of him, *cf.* Jöcher, *Allgemeines Gelehrten-Lexicon*, Pt. II., 20 Leipzig, 1750. — Tr.

[2] Honoré Fabri, 1607–1688, a French mathematician and philosopher, a a Jesuit, who taught philosophy and mathematics in the college of his or at Lyons, and later became Grand-Penitentiary at the holy office in Ro Among his writings are, *Synopsis geometrica*, Lugd., 1669; *Physica seu s entia rerum corporearum in decem tractatus distributa*, Lugd., 1669; *Summ Theologiæ*, Lyons, 1669. Leibnitz regarded him as one of the most dist guished men of his time, and frequently mentioned him with praise. *Théodicée*, Pt. III., § 348; *Hypoth. phys. nova*, §§ 56, 59, Gerhardt, *Leibn philos. Schrift.*, 4, 208, 214, 216; *Theoria motus abstracti, prope fin.*, *ibi* 240, and Appendix thereto, containing a letter of Fabri to Leibnitz, *ibid.*, 2 244, and of Leibnitz to Fabri, *ibid.*, 244–261 (also Gerhardt, *Leibniz. ma Schrift.*, II., 2 [Vol. 6], 81–98). For another Appendix to a letter of Leibn to Fabri, *cf.* Gerhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], 98–106, tra *infra*, Appendix, pp. 699 *sq.* — Tr.

ained case to the opponent without thinking and to deprive
reasoning of certainty. We must say rather that this
inciple is badly applied. The same author rejects in his
ilosophy the virtual distinctions, which the Scotists put
to created things, because they reversed, he says, the prin-
ole of contradiction: and when the objection is made to him
at these distinctions must be admitted in God, he replies
at faith orders it. But how can faith order that, whatever
be, which reverses a principle without which all belief,
irmation, or negation would be vain? Two propositions true
the same time must therefore necessarily not be wholly
ntradictory; and if A and C are not the same thing, it is
early necessary that B which is identical with A be taken
herwise than B which is identical with C. Nicolaus
edelius,[1] a professor at Geneva and afterward at Deventer,
ce published a book entitled "Rationale Theologicum," to
hich Jean Musæus,[2] a professor at Jena (which is an Evan-

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[1] *Cf. Théodicée*, Discours prélim., §§ 20, 67. Nicolas Vedel, a German
formed (Calvinistic) divine, was Professor of Philosophy and minister at
neva, of Theology and Hebrew at Deventer, 1630–1638, and of Theology
Franeker from 1638 till his death in 1642. He was a great adversary of
Arminians, and wrote against them his *De Arcanis Arminianismi*,
yden, 1632–1634. His *Rationale theologicum, seu de necessitate et vero usu
ncipiorum rationis ac philosophiæ in controversiis theologicis, lib. tres*,
neva, 1628, was attacked by Barth. Nihus, 1584–1657, in his *Morosophus
Vedelius in suo rationali prorsus irrationalis*, Cologne, 1646, as well as
Musæus. On the controversy between Vedelius and Musæus, *cf.* Pünjer,
sch. d. christ. Religionsphilosophie, 1, 118–124, Eng. trans., 159–167. For
ther account of Vedel, *cf.* Winer, *Handbuch d. theol. Lit.*, 1, 353, 375, 565;
P. Niceron, *Mém. d'hommes*, Vol. 33, 1736.—TR.

[2] *Cf. Théodicée*, Discours prélim., §§ 20, 67. Johannes Musæus, 1613–1681,
utheran divine, was Professor of History, 1642–1646, and of Theology, 1646
his death, at Jena. He was the greatest Lutheran divine of his century
er J. Gerhard, 1582–1637, and Geo. Calixtus, 1586–1656. He distinguished
ween theology and the confessions and favored liberty of scientific and
ological researches. He was everywhere acknowledged as a very learned
n, and his writings are distinguished by philosophical acumen so that he
s accused of "magis philosophari quam quod loquatur eloquia Dei." He
ote in defence of Christianity against Herbert of Cherbury, 1581–1648, a
rk entitled *De luminis naturæ et ei innixæ theologiæ naturalis insufficientia
salutem*, Jena, 1667; against Spinoza, his *Tractatus theolog.-polit.*, etc.,
ia, 1674 (on Musæus and Spinoza, *cf.* Pünjer, *Gesch. d. christ. Religions-
ilos.*, 1, 322–323, Eng. trans., 1, 435). His *De usu principiorum rationis et
ilosophiæ in controversiis theologicis lib. tres Nic. Vedelii Rationali Theo-
ico potissimum oppositi* appeared at Jena, 1644; 2d ed., 1665. For further
ount of Musæus, *cf.* Herzog, *Realencyklopädie*, 2d ed., 10, 376–380.—TR.

gelical university in Thuringia), wrote another book in opp
sition upon the same subject, *i.e.* upon "The Use of Reason
Theology." I remember to have considered these former
and to have remarked that the principal controversy was
scured by incidental questions, as when it is asked, what
theological conclusion is, and whether it is necessary to jud
of it by the terms which compose it, or by the means whi
prove it, and consequently whether Occam[1] was right or not
saying that the knowledge of one and the same conclusion
the same whatever[2] the means employed to prove it; and
delays upon a multitude of other minutiæ of still less impo
ance, which concern only terms. Meanwhile Musæus agre
with him that the principles of reason necessary by a logi
necessity, *i.e.* the opposite of which implies a contradicti
must and may be employed safely in theology; but he h
reason to deny that what is only necessary by a physical nec
sity (*i.e.* founded upon induction from that which is customa
in nature, or upon natural laws which, so to speak, are of divi
institution) is sufficient to refute the belief in a mystery
miracle, since it depends upon God to change the ordina
course of things. Thus it is according to the order of natu
that we may be certain that one and the same person cann
be at the same time a mother and a virgin, or that a hum
body cannot fail to be obvious to the senses, although t
contrary of both may be possible to God. Vedelius al
appears to agree to this distinction. But we sometimes d

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[1] William of Occam, the date of whose birth is unknown, and who died
Munich in 1347, renewed and developed Nominalism in the form of *Ter*
nism, the *Termini* (concepts) being subjective signs of really existing thin
and not mere names—*flatus vocis*—as so frequently regarded. The relati
of his philosophy to subsequent thinking are well set forth by Windelba
Tufts, *Hist. of Philos.*, pp. 312, 315, 325 *sq.*, 342 *sq.* For Leibnitz's view
his Nominalism, *cf. De stilo philos. Nizolii*, § 28, Erdmann, 68 b–69 b; G
hardt, 4, 157–158. On his life and philosophy, *cf.* Stöckl, *Gesch. d. Philos*
Mittelalters, II., 2 [Vol. 3], 986–1021; Hauréau, *Hist. d. la Philos. scolastiq*
II., 2 [Vol. 3], 356–430; Prantl, *Gesch. d. Logik*, 3, 327–420.—Tr.

[2] Gerhardt reads: "quel moyen qu'on employe," etc.; Erdmann, Jacqu
and Janet read: "que le moyen qu'on emploie," etc., *i.e.* "as the me
employed," etc. Schaarschmidt, in his translation, follows the reading
Erdmann, Jacques, and Janet, and says in his note to the passage: "Dass
mit andern Worten bei unserm Schlussverfahren uns nothwendig im Cir
bewegten," *i.e.* "That we, in other words, in our reasoning, necessarily mo
in a circle." The correct reading can be determined only by the exact l
guage of Occam, which thus far I have been unable to find.—Tr.

te about certain principles, whether they are logically
cessary, or only physically so. Such is the dispute with
e Socinians, whether substance can be multiplied when the
lividual essence does not exist; and the dispute with the
vinglians, whether a body can be only in one place. Now
must admit that every time that logical necessity is not
monstrated, we can presume in a proposition only physical
cessity. But it seems to me that a question remains, which
e authors of whom I have just spoken have not sufficiently
amined, namely this: Suppose that on one side we find the
eral sense of a text of Holy Scripture, and on the other a
eat appearance of logical impossibility, or at least an ad-
tted *physical impossibility,* is it more reasonable to deny the
eral sense or the philosophical principle? It is certain that
ere are passages where to abandon the letter occasions no
ficulty, as when Scripture gives hands to God and attributes
him anger, penitence, and other human affections; other-
se it would be necessary to array ourselves on the side of
e anthropomorphists, or of certain English fanatics who
lieve that Herod was really changed into a fox when
sus Christ called him by that name. It is here that the
les of interpretation are in place, and if they furnish nothing
ich combats the literal sense in order to favor the philo-
phic maxim, and if in addition the literal sense has nothing
ich attributes to God any imperfection, or entails any
nger in the practice of piety, it is safer and indeed more
isonable to follow it. These two authors whom I have just
med dispute further upon the undertaking of Keckermann,[1]

Bartholemew Keckermann, 1573–1609, a Semi-Ramist, was Professor of
brew at Heidelberg, and, from 1601, of Philosophy at the Gymnasium at
atzic. He was the author of many compilations, made for the use of his
ils in the gymnasium, in which he presented all the sciences in a method-
l and systematic form. His *Opera omnia* appeared at Geneva, 1614, 2
s., fol. Leibnitz refers to him in the same connection in the *Théodicée*,
cours prélim., § 59. For further account of him, *cf.* W. Gass, *Gesch. d.
testantischen Dogmatik in ihrem Zusammenhange mit d. Theologie*, Vol. 1,
408 *sq.* Pünjer, *Gesch. d. christ. Religionsphilos.*, 1, 118, 127, 128, Eng.
ns., 1, 158, 170, 172, briefly refers to him.

According to Schaarschmidt, Keckermann's proof of the Trinity from
son, which is quite closely connected with that of Lully, as Lully's with
thoughts of Augustine, is found in his *Systema ss. theologiæ* (1st ed.,
2; 2d ed., Hanoviæ, 1607), chap. 3, pp. 20 *sq.*, 3d ed., Hanoviæ, 1615. In
introduction Keckermann expresses himself very decidedly. "Fateor

who wished to demonstrate the Trinity by reason, as Raymo Lully [1] had also tried to do formerly. But Musæus acknow edged with sufficient fairness that if the demonstration of t Reformed author had been valid and just, he would have h nothing to say on the subject; that he would have been right maintaining as regards this article that the light of the Ho Spirit might be illumined by philosophy. They have al discussed the famous question, whether those who, witho any knowledge of the revelation of the Old or New Testame died in the opinions of a natural piety, could have been sav by this means and obtained the remission of their sins? W

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equidem ultro, circa mysterium de ss. Triade, ad id esse omnem intellect humanum, quod est oculus vespertilionis ad solem," etc. Keckermann's monstration was refuted by Musæus in the "Dissertatio altera," appended his *De usu princip. rationis et philos. in controversiis theologicis*, 2d ed., Jen 1665. — Tr.

[1] Raymond Lully, 1234 or 1235–1315, best known as the inventor of "Great Art," attempted to demonstrate against the assertions of the Av roists, the inherent rationality of the doctrines of Christianity. His *Op omnia*, 10 vols. (Vols. 7 and 8 probably never printed), fol., appeared Mainz, 1721–1742. For an account of his life and philosophy, *cf.* Stöc *Gesch. d. Philos. d. Mittelalters*, II., 2 [Vol. 3], 924–952; Erdmann, *Grund. Gesch. d. Philos.*, § 206, Vol. 1, pp. 375–393, Eng. trans., 1, 447–468; Neand *Hist. of the Christ. Relig. and Church*, 4, 65–71, 426, 435 *sq.*; for his Log *cf.* Prantl, *Gesch. d. Logik im Abendlande*, 3, 145–177. *Cf.* also an arti by Delecluse in the "Revue de Deux Mondes," 1840.

Lully occupied himself much with the proof of the Trinity, discussing according to Schaarschmidt, in his *Quæstiones* [*Disputatio Erimitæ et R mundi* — Erdmann] *super lib. Sententiarum*, Lib. I., quæst. 6; *Disputatio fid (catholici) et infidelis*, pp. 2, 3; and especially in the *Disputatio fidei et in lectus*, Pt. I., where the question of the demonstrability of the Trinity is c sidered in detail, and Pt. II., where the proof is attempted. Schaarschm thinks that Leibnitz probably has in mind this last work. All three wo are found in *Opera*, Vol. 4, ed. Mainz, 1729. Stöckl, *op. cit.*, II., 2 [Vol 3], 9 944, gives an account of Lully's argument on the Trinity, based chiefly on *Articuli fidei sacrosanctæ*, found in the collection of Lully's works entit *Opera ea quæ ad inventam a Lullo artem universalem pertinent*, Argentor 1598, 1607, and 1617, and also in *Opera*, Vol. 2, ed. Mainz, 1722. In his list Lully's works, Stöckl cites the following which discuss the Trinity: *Liber c tradictionis inter Raymundum et Averroistam de centum syllogismis ci mysterium Trinitatis; Liber de substantia et accidente in quo proba Trinitas.* *Cf.* also Neander, *op. cit.*, 4, 465.

For Leibnitz's own views on the Trinity, *cf.* his *Defensio Trinitatis nova reperta logica, contra Epistolam Ariani*, Dutens, *Leibnit. op. om.*, 1, 16; *Duæ Epist. ad Lœflerum de Trinitate et Definitionibus Mathemat circa Deum, Spiritus*, etc., Dutens, *op. cit.*, 1, 17–23; *Remarques sur le li d'un Antitrinitaire Anglois*, etc., Dutens, *op. cit.*, 1, 24–27, and Feller, *Leib Miscellanea*, No. IV., pp. 8–15; *Théodicée*, Discours prélim., § 22; Letter M. B., 1696, Feller, *op. cit.*, No. VIII., pp. 26 *sq.* — Tr.

ow that Clement of Alexandria, Justin Martyr, and St.
rysostom to a certain extent were inclined thereto,[1] and
deed I once showed Pelisson[2] that a number of excellent
ctors of the Roman church, far from condemning non-opin-
native Protestants, even desired to save the heathen and to
aintain that the persons of whom I have just spoken could
ve been saved by an act of *contrition, i.e.* penitence grounded
the love of benevolence, in virtue of which we love God
ove everything, because his perfections render him supremely
vable. This brings it about that afterwards we are led with
l our hearts to conform to His will and to imitate His per-
ction in order the better to unite ourselves with Him, since it
pears right for God not to refuse his grace to those who hold
ch views. Not to speak of Erasmus and of Ludovicus Vives,[3]

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[1] Clement of Alexandria, born c. 150–160, date and place of death unknown.
. *Stromata* (or *Miscellanies*), Bk. VI., chaps. 5 and 6.—Justin Martyr,
114–c. 163. *Cf. First Apology*, chap. 46; *Second Apology*, chaps. 8 and 13.
John Chrysostom, c. 347–407. Clement and Justin entered the Christian
urch as thinkers trained in Greek philosophy, which they regarded as the
t of God in preparation for the fuller light and life of Christianity—Justin
particular through his view of the "spermatic logos," "the seed of reason
planted in every race of men"; while Chrysostom, trained in Greek rheto-
and oratory, took a similar view of Greek culture as from God and not
m the evil one. All three would naturally look upon those who lived up
the light they had as likely to receive more in due time, and to accept it
l live in it when it came.—Tr.

[2] Paul Fontanier-Pellisson, 1624–1693, born and educated a Protestant, fol-
ved at first the profession of the law, but afterwards abandoned it for that
literature. He held several public offices, among others that of histori-
apher to Louis XIV. To obtain this position he was obliged to become a
tholic. He published a large number of works, among which was a Latin
aphrase of the first book of the Institutes of Justinian, 1645; *Histoire de*
cadémie française jusqu'en 1652, 1653, 8vo; *Traité de l'Eucharistie*, 1694,
no, and other religious works. He corresponded extensively with Leibnitz
religious and theological subjects. The correspondence is contained in his
flexions sur les différends en matière de religion, 1686, and following years,
ols., 12mo. Portions of the same in Dutens, *Leibnitz op. om.*, 1, 678 *sq.*;
st complete in Foucher de Careil, *Œuvres de Leibniz*, Vol. 1. For the
ter here referred to by Leibnitz, *cf.* Dutens, *op. cit.*, 1, 681–684, Foucher de
reil, *op. cit.* 1, 55–66; for Pellisson's replies, *cf.* Dutens, *op. cit.*, 1, 697, 700–
, Foucher de Careil, *op. cit.*, 1, 90–92, 96–100. For account of the controversy,
Guhrauer, *Leibnitz, Eine Biog.*, Pt. II., 35 *sq.*—Tr.

[3] Juan Luis Vives, 1492–1540, a Spanish scholar and philosopher, a younger
temporary and friend of Erasmus, 1467–1536, and for a time the instructor
the Princess Mary, daughter of Henry VIII., was a persistent and success-
opponent of scholastic Aristotelianism, and, as an advocate of the direct
dy of Nature by the way of experiment, the precursor of Descartes and
con. His *Opera omnia* appeared at Basle, 1555, 2 vols., fol., and at Valencia,

I bring forward the view of Jaques Payva Andradius,[1] a Portuguese doctor very celebrated in his time, who was one of the theologians of the Council of Trent, and who said indeed that those who did not agree with this view made God supremely cruel (*neque enim, inquit, immanitas deterior ulla esse potest*) Pelisson found difficulty in finding this book in Paris, an indication that authors esteemed in their time are often neglected afterwards. This is what made Bayle think that many cite Andradius only upon the testimony of Chemnitius,[2] his antagonist. This may indeed be so, but for myself I had read him before quoting him; and his disputes with Chemnitius made him celebrated in Germany, for he had written in behalf of the Jesuits against this author, and we find in his book some par

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1782–1790, 8 vols., fol. On his life and philosophy, *cf.* Stöckl, *Gesch. d. Philos. d Mittelalters*, III. [Vol. 4], 285–287; Ueberweg-Heinze, *Gesch. d. Philos.*, 7th ed. 1888, Vol. 3, pp. 24, 25; Lange, *Gesch. d. Materialismus*, Vol. 1, p. 106, Iserlohn 1866, Eng. trans., 1, 228, 2d ed., Boston, 1879; and Lange's article on "Vives," in *Encykl. d. ges. Erzieh.- u. Unterrichtswesen*, Vol. 9, pp. 737–814. — Tr.

[1] Diego Payva d'Andrada, 1528–1575, a celebrated theologian of one of th most noble Portuguese families, who, after completing his studies chiefly in the Scriptures and the Fathers, devoted himself with zeal to missions fo instructing the ignorant, and was sent at the age of thirty-three by King Sebastian of Portugal to the Council of Trent to assist as a theologian. Ther he composed his *Orthodoxarum explicationum de religionis Christianæ capitibus lib. X. adversus hæreticos, contra Chemnicium*, Venetiis, 1564, 8vo and his *Defensio Tridentinæ fidei catholicae et integerrimæ V. lib. comprehensa adversus hæreticorum detestabiles calumnias et praesertim Martin Chemnicii Germani*, Olyssipone, 1578, 4to, Ingolstadt, 1580, 8vo. In the latter book he maintained the opinions of Zwingli and Erasmus on the salvation of the heathen, in consequence of which the book was much quoted by Protestants. Leibnitz refers to him in this same connection in the *Théodicée*, Pt. I. § 96; in an excerpt from a letter to a friend written Nov. 1697, *cf.* Dutens *Leibnit. op. om.*, 1, 33; in his letters to Pellisson, Dutens, *op. cit.*, 1, 683 Foucher de Careil, *Œuvres de Leibniz*, 1, 65–66; and in his letters to Ant Magliabechius, No. 28, 26 Nov., 6 — Dec., 1697, Dutens, *op. cit.*, 5, 121, and to Joh. Fabricius, Prof. at Helmstadt, No. 16, Sept. 20, 1698, Dutens, *op. cit.* 5, 235. — Tr.

[2] Martin Chemnitz, 1522–1586, a German Lutheran theologian, a disciple o Melancthon, 1497–1560, and said to be the ablest theologian of the period immediately succeeding Luther, was Professor of Theology at Wittemberg, 1551–1554 and then for thirty years pastor at Brunswick. To him more than to any othe the Lutheran church owes its purity of doctrine and compact organization His *Loci Theologici*, Frankfort, 1591, is one of the best expositions of Lutheran theology as modified by Melancthon. His greatest work, the *Examen Concilii Tridentini*, appeared at Frankfort in four parts, 1565–1573, again in 1585 4 vols., fol., and in later eds. For further account of Chemnitz, *cf.* Schenkel' article in Herzog, *Realencyclop.*, 2d ed., Leipzig, 1878, Vol. 3, pp. 184–192 Leibnitz refers to him also in the *Théodicée*, Discours prélim. § 67. — Tr.

lars touching the origin of this famous society. I have arked that some Protestants called those *Andradians*, who re of his opinion upon the subject of which I have just spoken. ere have been authors who have written expressly upon the vation of Aristotle upon the basis of these same principles h the approbation of the Censors. The books also of Collius[1] Latin and La Mothe le Vayer[2] in French on the salvation of heathen are well known. But a certain Franciscus Puccius[3]

Francesco Collio — Latin, Collius (“Collins” being a misprint for “Col- ” in all the editions of Leibnitz's text) — was an Italian theologian of t learning, a doctor of the Ambrosian College at Milan, and Grand Peni- iary of the diocese of Milan from 1631 till his death in 1640. In his *De ani- bus paganorum*, 2 vols., 4to, Mediol. 1622–1623, 2d ed., 1738–1740, he discussed question of the eternal salvation of the pagans, deciding as to the fate of viduals on the ground of their knowledge of divine things, their moral , sentiments and writings, and the testimony regarding them given by eccle- tical and profane writers. He considers Aristotle as unsaved. Dupin, *l. des Aut. ecclés.*, 1711, tom. 17, pp. 109–116 *sq.*, gives a long abstract from work, and an estimate of its character and value. *Cf.* also Tiraboschi, *ria della Letteratura Italiana*, Vol. 14 [Tomo VIII, Parte Prima, ed. Rome, 2–1784], pp. 167–168, Milan, 1824. — Tr.

François de La Mothe le Vayer, 1588–1672, a French writer and philos- er, was from 1652–1660 the instructor of Louis XIV. of France, for whom omposed many elementary treatises on various subjects of study. The book referred to by Leibnitz is his *De la vertu des païens*, Paris, 1642, 4to., ed., 1647. The subject is treated in the conclusion of Pt. I., *cf. Œuvres*, . 1, p. 582, Paris, A. Courbe, 1662. The best ed. is that published at Dres- , 1756–1759, 7 vols. in 14, 8vo. The *De la vertu des païens* —avec les preuves citations mises sous le texte — is found in Vol. 5, pp. 1 *sq.* of this ed. Vayer goes back to the Church Fathers and later ecclesiastical writers, gives much literature. — Tr.

Francesco Pucci, an Italian theologian (died 1660), was led to devote him- to theology by his participation in religious controversies at Lyons, whither ad gone to learn commerce. Adopting mostly Protestant ideas, he went ngland, where he received an Oxford M.A. in 1574. Opposing, in his *De in Deum, quæ et qualis sit*, the Calvinism then ruling at Oxford, he went asle and joined himself to F. Socinus, but soon returned to England in sequence of persecution on account of his views on universal grace, put h in theses entitled *Universum genus humanum in ipso matris utero aciter particeps esse beneficiorum Christi et vitæ immortalis et beatæ*, etc. finally became a Catholic, 1588, and secretary of Cardinal Pompei. In his *immortalitate naturali primi hominis ante peccatum* he combatted certain s of Socinus, and in his *De Christi Salvationis efficacitate omnibus et sin- s hominibus quatenus homines sunt assertio catholica*, Gouda, 1592, 8vo, aintained the view that all men could be saved through the natural power eason, or through the natural belief in the Creator. He proposed to prove cripture and the Fathers that Christ by his death made satisfaction for all , so that all having a natural knowledge of God will be saved, although ing no knowledge of Jesus Christ. — Tr.

went too far. St. Augustine, wholly clever and penetrating a
he was, threw himself into another extreme view, even con
demning infants dying without baptism,[1] and the Scholastic
appear to have been right in abandoning it; although person
otherwise clever and some of great merit, but of a disposition
little misanthropic in this respect, desired to revive this doctrin
of this Father and have perhaps exaggerated it. This spir
also may have had some influence in the dispute between severa
excessively vehement doctors and the Jesuit missionaries i
China, who had insinuated that the ancient Chinese had ha
the true religion of their time and the true saints, and that th
doctrine of Confucius was in no respect idolatrous or atheisti
It seems that there was more reason in Rome in being unwillin
to condemn one of the greatest nations without understanding i
It is well for us that God is more philanthropic than men.
know some persons who, thinking to show their zeal by sever
opinions, fancy that we cannot believe in original sin withou
being of their opinion, but in this they are mistaken. And i
does not follow that those who justify the heathen, or other
who lack ordinary aid, must attribute it to the forces of natur
only (although perhaps some Fathers were of this opinion), sinc
we may maintain that God in giving them the grace excitin
an act of contrition gives them also, either explicitly or virtu
ally, but always in a supernatural way, before they die, even i

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[1] On this and the immediate context, *cf. Théodicée*, Pt. I., §§ 92–95, Pt. III
§ 283. Augustine's view is found in his works *passim*. *Cf.*, among other
Enchir. ad Laurent., chap. 43; *De nuptiis et concupiscentia*, Bk. I., chap. 2
with which *cf. Contra Julianum Pelagianum*, Bk. III., chap. 12 (infants unde
the power of the devil on account of original sin — the "potestas diaboli"
"peccatum originale"), and Bk. V., chap. 44; *Contra duas epist. Pelag*
Bk. IV., chap. 4; *De peccatorum meritis et Remissione et de Baptismo Parv*
lorum, Bk. I., chap. 25, Bk. III., chap. 7; *De peccato originale*, chap. 36; *D*
civitate Dei, Bk. XIII., chap. 14. *Cf.* also Shedd, *Hist. of Christ. Doct.*, 2, 7
note 2, 77, note 1; Hagenbach, *Hist. of Doct.*, ed. H. B. Smith, 1, 360, an
trans. from later German ed. T. & T. Clark, 1880, 3 vols., Vol. 2, pp. 73 *sq*
Augustine believed that infants because of hereditary depravity — origina
sin — belonged to the "massa perditionis," and, unless relieved from the pe
alty therein inhering by the sacrament of baptism, which was thus a means
salvation to the infant, must incur the penalty and be lost. Their condemna
tion, however, since they were guilty of no personal sin, would be the lightes
of all — "in damnatione omnium levissima" (*C. Jul. Pelag.*, V. 44).

For a brief, but most excellent and satisfactory, discussion of the Salvatio
of Infants, *cf.* E. G. Robinson, *Christian Theology*, § 28, pp. 164–169, Roche
ter, N. Y., Press of E. R. Andrews, 1894. — Tr.

ly at the last moment, all the light of faith and all the warmth love necessary to their salvation. Thus it is that the Reformes explain with Vedelius the view of Zwingli,[1] who had also pressed the same view upon this point of the salvation of the rtuous men of Paganism, as the doctors of the Roman church ve done. This doctrine also has nothing in common for that ason with the particular doctrine of the Pelagians or Semielagians, from which we know that Zwingli was far removed. nd since we teach against the Pelagians a supernatural grace all those who possess faith (in which the three received ligions agree, excepting perhaps the disciples of Pajon)[2] and they allow also either faith or at least similar movements to fants who receive baptism, it is not very extraordinary to low as much at least in the article of death to persons of good ill who have not had the good fortune to be instructed as sual in Christianity.[3] But the part of the wisest is to deterine nothing upon points so little known, and to content himlf with the general judgment that God can do nothing which not full of goodness and justice: *melius est dubitare de cultis quam litigare de incertis* (Augustine, lib. 8, Genes. ad t. c. 5).

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[1] Ulrich Zwingli, 1484–1531, introduced the Reformation into Switzerland out the same time that Luther, 1483–1546, introduced it into Germany. is view on the salvation of the heathen, a consequence of his milder view original sin or innate depravity, is found in his *Christ. Fidei brevis et clara positio*, *Werke*, ed., Schuler u. Schulthess, Zürich, 1828–1842, 8 vols., Vol. pp. 42–78. In his treatise *De Providentia* (*ibid.*, Vol. 4, pp. 79–144) he lvanced the principle that pagans who have acknowledged the true God d have led a good life, such as Socrates and Seneca, are capable of being ved without faith; and he extended this principle to all who have no nowledge of the gospel. — Tr.

[2] Claude Pajon, 1626–1685, a French Protestant theologian, Professor of heology at Saumer, 1666, and later pastor at Orleans. Pajon taught that conversion the Holy Spirit did not act immediately or irresistibly upon the art, but that the soul was itself active in the work of salvation, allowing self to be convinced by the efficacious word of truth found in Scripture with hich the Spirit's influence was intimately united. His views were opposed both Lutherans and Reformed. For further account of him, *cf.* Alex. hweizer, *Central-Dogmen d. Reform. Kirche*, 2 vols., 1854–1856, Vol. 2, pp. 4–663, and in Herzog, *Realencyclop.* 2d ed., Leipzig, 1883, Vol. 11, pp. 161–3; W. Gass, *Gesch. d. prot. Dogmatik*, 2, 359 *sq.* — Tr.

[3] *Cf.* Feller, *Otium Hanoveranum*, No. LXXXVIII., pp. 181–183 (Dutens, 6, 11, 312). — Tr.

CHAPTER XIX

OF ENTHUSIASM

§ 1. *Ph.* [Would to God that all theologians and St. Augu
tine himself had always practised the maxim expressed
this passage.] But men think that the dogmatic spirit is
indication of their zeal for the truth, while it is wholly t
contrary. We love the truth in reality only in proportion
we love to examine the proofs which make it what it is. An
when we judge hastily we are always pressed by less since
motives. § 2. The spirit of authority is not one of the le
common motives, and a certain satisfaction it has in its ow
reveries is another motive which causes *enthusiasm* to sprin
up. § 3. This is the name which is given to the failing
those who believe an immediate revelation when it is n
grounded in reason. § 4. And as we may say that *reason* is
natural revelation of which God is the author, just as he
the author of nature, we may also say that *revelation* is a supe
natural reason, *i.e.* a reason extended upon the basis of ne
discoveries emanating directly from God. But these disco
eries suppose that we have the means of discerning the
which is reason itself; and to desire to proscribe reason i
order to make way for revelation would be to pluck out th
eyes the better to see the satellites of Jupiter through a tel
scope. § 5. The source of enthusiasm is that an immediat
revelation is more convenient and shorter than the long an
difficult process of reasoning which is not always followed b
a happy result. Men have been seen in all ages whose mela
choly mingled with devotion, united with the good opinio
they have had of themselves, has made them believe that the
had an altogether different intercourse with God from othe
men. They suppose he has promised it to them and believ
themselves his people preferably to others. § 6. Their fanc
becomes an illumination and a divine authority, and thei
plans are an infallible direction from heaven, which they ar
obliged to follow. § 7. This view has produced great result
and caused great evils, for a man acts more vigorously whe

follows his own impulses and when the opinion of a divine
:hority is sustained by his inclinations. § 8. It is difficult
draw him therefrom, because this pretended certainty with-
; proof flatters his vanity and love for that which is extraor-
ary. Fanatics compare their opinions to sight and feeling.
ey see the divine light as we see that of the sun at noon
hout needing the twilight of their reason to show it to them.
. They are certain because they are certain, and their per-
ısion is right because it is strong, for this is the result to
ich their figurative language reduces itself. § 10. But as
re are two perceptions, that of the proposition and that of
revelation, we may ask them where is clearness. If it is
the sight of the proposition, what good is revelation? It
st then be in the feeling of revelation. But how can they
that it is God who reveals and not a will-of-the-wisp which
ds them around this circle: this is a revelation because I
ieve it strongly, and I believe it because it is a revelation.
1. Is there anything more suited to throw one into error
n to take the imagination for a guide? § 12. St. Paul had
at zeal when he persecuted the Christians and did not allow
nself to be mistaken. We know that the devil has had
rtyrs, and if it is sufficient to be well persuaded we shall not
able to distinguish the delusions of Satan from the inspira-
ns of the Holy Spirit. § 14. It is then the reason which
kes known the truth of revelation. § 15. And if our
ief proved it, it would be the circle of which I just spoke.
e holy men who received the revelations of God had *external*
ns which persuaded them of the truth of the inner light.
ses saw a bush which burned without being consumed, and
ırd a voice from the midst of the bush, and God, in order to
e him more assurance concerning his mission when he sent
n to Egypt to deliver his brethren, made use of the miracle
the rod changed into a serpent. Gideon was sent by an
gel to deliver the people of Israel from the yoke of the Mid-
ites; yet he demanded a sign in order to be convinced that
s commission was given him on the part of God. § 16. I
not, however, deny that God sometimes illumines the minds
men, in order to make them understand certain important
ths or to lead them to good acts, by the immediate influence
l assistance of the Holy Spirit without any extraordinary

sign accompanying this influence. But in these cases also v have reason and Scripture, two infallible rules for judging these illuminations; for if they agree with these rules we ru at least no risk in regarding them as inspired of God, althoug it is not perhaps an immediate revelation.

Th. Enthusiasm was at the beginning a good term. And the sophism properly indicates an exercise of wisdom, enthus asm signifies that there is a divinity in us. *Est Deus in nobi* Socrates maintained that a god or dæmon[2] gave him intern warnings, so that *enthusiasm* would be a divine instinct. B men having consecrated their passions, fancies, dreams, an even their anger as something divine, enthusiasm began to si nify a mental disturbance attributed to the influence of son divinity, which is supposed to be in those who are smitten ther with; for the soothsayers, male and female, showed a ment derangement, when their god seized them, as the Cumæa Sibyl in Vergil.[3] Since then we attribute it to those who b lieve without foundation that their movements come from Go Nisus in the same poet thinking himself pressed by I kno not what impulse to a dangerous enterprise, in which he pe ished with his friend, proposed it to him in these terms full a reasonable doubt:—

> Di ne hunc ardorem mentibus addunt,
> Euryale, an sua cuique Deus fit dira cupido?[4]

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[1] Ovid, *Fasti*, 6, 5: "Est Deus in nobis, agitante calescimus illo."—Tr.

[2] On the dæmon of Socrates, *cf.* Zeller, *Philos. d. Griech.*, II., 1 [Vol. 73–91, 4th ed., Leipzig, 1889; J. S. Blackie, *Four Phases of Morals*, pp. 1 127, New York, 1872; H. Jackson, "On the δαιμόνιον of Socrates" in t "Journal of Philology," V., and article "Socrates," *Encyclop. Brit.*, 9th e Vol. 22, p. 246 (Amer. reprint).—Tr.

[3] *Cf.* Vergil, *Æneid*, 6, 49: "Et rabie fera corda tument." The view he mentioned by Leibnitz, that persons gifted with inspiration or enthusias were also affected with some derangement or disturbance of the ordinary me tal processes, was current in one form or another throughout all antiqui and had its influence, through the contact of Greek thought with Chr tianity, in shaping the Christian doctrine of inspiration. *Cf.* Plato, *Phædr* 244, Jowett's trans., 2d ed., 1875, 2, 121, 3d ed., 1892, 1, 449–450; *Ion*, 533–5 Jowett, 2d ed., 1, 247–248, 3d ed., 1, 501–503; *Timæus*, 71–72, Jowett, 2d ed., 654–656, 3d ed., 3, 492–494; the Stoic view, Zeller, *Philos. d. Griech.*, III. [Vol. 5], 336 *sq.*, Plutarch, *ibid.*, III., 2 [Vol. 6], 193 *sq.*, Philo, 414 *sq.*, P tinus, 611 *sq.*; Pfleiderer, *Religionsphilosophie*, 2d ed., 1884, 2, 339 *sq.*, E trans., 4, 46 *sq.*—Tr.

[4] Verg. *Aen.* 9, 184–185.—Tr.

e ceased not to follow this instinct although he knew not
ether it came from God or from an unfortunate desire to
stinguish himself. But if he had been successful, he would
t have failed to acquire authority in another case and to
ink himself impelled by some divine power. The enthusi-
s of the present think that they receive also from God the
gmas which they observe. The Quakers belong to this per-
asion, and Barclay, their first systematic author, maintains
at they find in themselves a certain light which is made
own by itself.[1] But why call that *light* which reveals noth-
? I know that there are some persons of this disposition
mind who see sparks and even something more luminous,
t this image of material light excited when their minds are
oused gives no light to the mind. Some idiots with a restless
agination form conceptions which they had not before; they
in a condition to say fine or at least very animated things
their opinion; they admire themselves and make others
mire this fertility which passes for inspiration. This ad-
ntage comes to them largely from a vivid imagination which
ssion rouses and from an excellent memory which has well
ained the methods of speech of the prophetic books which
reading or discourse of others has rendered familiar to
em. Antoinette de Bourignon made use of the facility she
d in speaking and writing as a proof of her divine mission.[2]
now a visionary who based his divine mission upon the tal-

Cf. Leibnitz's letter to Thos. Burnett, July 17–27, 1696; Gerhardt, *Leibniz.
los. Schrift.*, 3, 184. On the doctrine of the "inner light," the immediate
elation of the Spirit of God in each individual soul, "the light that lighten-
every man,"—the most characteristic doctrine of the Quakers,—*cf.* Robert
clay, 1648–1690, *An Apology for the True Christian Divinity*, Prop. II.,
Immediate Revelation; and the excellent account of Bancroft, *Hist. of the
S.*, chap. 23, Vol. 2, pp. 78 *sq.*, Centenary ed., Boston, 1876.—Tr.

Antoinette Bourignon, 1616–1680, an enthusiast whose religious doctrines
le considerable stir in her lifetime and for a short time after in Holland
Scotland, but have long ceased to have any influence and are now almost
lly forgotten. Her complete works in French appeared at Amsterdam,
, 19 vols., 8vo; 1717, 21 vols., 8vo, with a life of the author by Pierre Poiret,
–1719, a Calvinistic minister and famous mystic, who became her disciple,
ed her works, and attempted to reduce to system her vague reveries in his
onomie de la nature, Amsterdam, 1686, 21 vols., 8vo. Her prophetic views
e expounded in her *Traité de l'aveuglement des hommes* (*Œuvres*, ed.
, Vol. 15), her *La lumière du monde* (*ibid.*, Vol. 7), and her *De la lumière
en ténèbres* (*ibid.*, Vol. 4), the last work being "a collection of letters,
h a large explanation of Matt. 24 and 25"; Eng. trans. *The Light of the*

ents he had in speaking and praying aloud almost an enti day without ceasing and without becoming exhausted. Ther are some persons who, after having practised austerities after a state of sadness, taste a peace and consolation in th soul which enraptures them, and they find therein so much d light that they believe it to be an effect of the Holy Spirit. I is true that the contentment they find in considering the grea ness and goodness of God, in the accomplishment of his wil in the practice of the virtues, is a grace of God and one of th greatest; but it is not always a grace which needs a new supe natural aid, as many of these good people maintain. Not lon since there was a young lady very wise in everything else, wh believed from her youth that she spoke with Jesus Christ an was his wife in a wholly peculiar manner. Her mother, t whom this was related, was a little given to enthusiasm, bu the daughter having commenced early had gone very muc farther. Her satisfaction and joy was unspeakable, her wis dom appeared in her conduct, and her intelligence in he discourse. The thing went, however, so far that she receive letters addressed to our Lord and she sent them back seale as she received them with a reply which sometimes appeare appropriate and always reasonable. But finally she ceased t receive them from fear of making too much disturbance. I Spain she would have been another St. Theresa. But all per sons who have similar visions do not conduct themselves i the same way. There are some who seek to form a sect, an even to make trouble: and England furnishes a strange proo of this.[1] When these persons act in good faith it is difficult t

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World, London, 1696; *The Light risen in Darkness*, London, 1703. Leibnit refers to her in a fragment, *Sur l'esprit Sectaire*, 1697, *cf*. Dutens, 1, 740. Fo further account, *cf*. J. C. Adelung, *Gesch. d. mensch. Narrheit*, Leipzig, 1785 1789, 7 vols., 16mo, Vol. 5, pp. 245–391; Gottfried Arnold, *Kirchen u. Ketzerhi torie*, Frankfort-on-the-Main, 1729, Theil. III., Cap. XVI., Vol. 2, pp. 153–17 Th. IV., Sect. III., Num. XVII., Vol. 2, pp. 1065–1089; Wetzer u. Welt *Kirchenlexicon*, Vol. 2, pp. 1167–1170, ed. 1883. — Tr.

[1] Leibnitz here refers to the Independents, who, arising in obscurity in Eng land in the reign of Elizabeth and gradually gaining in numbers and influenc as a result of the persecution to which they were subject at the hands of th established Church and the State, and of their success in founding the Ne England States, came to the front in the time of the Revolution and change at length the political as well as the religious life of England, and becam a powerful and controlling force in the life and institutions of the America people. In their fundamental principle that religion is a matter of the ind

form them: sometimes the overthrow of all their plans cor-
cts them, but often it is too late. There was a visionary who
tely died who believed himself immortal because he was very
d and very well, and without having read the book of an
nglishman lately published (who wished to make us believe
at Jesus Christ came to exempt true believers from bodily
ath) was almost of the same opinion for some years past;
it when he perceived that he was dying he went so far as to
oubt all religion because it did not correspond to his chimera.
iirin Kulman [*sic*],[1] a Silesian, a man of knowledge and judg-
ent, but who had since indulged in two kinds of visions,
ually dangerous, the one of the enthusiasts, the other of the
chemists, and who made some stir in England, Holland, and
en in Constantinople, being at last advised to go into Russia
d there to mix himself up in certain intrigues against the
inister, at the time when the Princess Sophia governed it,
as condemned to be burned, and did not die like a man per-

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lual reason and conscience, wholly free from State or other control, they
re in a general way a somewhat close resemblance to the Quakers and
ner enthusiasts of their time.

In this connection Schaarschmidt ventures the conjecture that Leibnitz
ıy have had his attention called to the persons and circumstances men-
ned in this chapter by a large work, appearing not long before, entitled,
abaptisticum et enthusiasticum Pantheon, und Geistliches Rüsthauss wider
Alten Quäcker und Neuen Frey-Geister, u. s. w., Cothen, W. A. Meyer,
)2, since his allegations strikingly call to mind this work. But may not
yle's *Dictionnaire* as well have been the source of his information, inas-
ich as it contains considerably extended articles on the persons mentioned,
d was a work with which Leibnitz was thoroughly familiar? — Tr.

[1] Quirin Kuhlmann, 1651–1689, in consequence of a disordered brain result-
; from a severe illness at the age of 18, became subject to hallucinations,
t his previous taste for study, claimed to possess a method by which he
ght know everything independent of the usual processes of acquisition, and
ıt the Holy Ghost was his only teacher, and on these grounds considered
nself a saint. At Leyden, falling in with the works of Boehme, he imme-
tely became an enthusiastic disciple. It is said that he wished to marry
toinette Bourignon, but that her "inviolable chastity" caused her to refuse
n. Leaving Holland in 1675 he travelled, it is believed, in England, France,
l Turkey. At Constantinople he addressed a letter, Aug. 1, 1678, to the
ltan Mahomet IV., in which he predicted the conversion of the Turks, and
ight to win the Sultan to his views. Failing to attain his desired end, he
nt to Russia to set up the true kingdom of God, was opposed by Peter the
eat, and after a brief trial condemned by the Greek Patriarch — it is said
the suggestion of a Lutheran clergyman — to be burned alive as a heretic
1689. For further account, *cf.* Adelung, *Gesch. d. mensch. Narrheit*, Vol.
pp. 3–90 (allusion to his alchemistic impostures, *ibid.*, pp. 52, 53, 65, 81);
etzer und Welte, *Kirchenlexicon*, 7, 1237. — Tr.

suaded of that which he had preached. The dissensions of th
people among themselves ought further to convince them t
their pretended *internal witness* is not divine; and that ot
signs are necessary to justify it. The Labadists,[1] for exa
ple, do not agree with Mademoiselle Antoinette, and althou
William Penn appears to have had the design in his travels
Germany, of which he has published an account, of establi
ing a kind of understanding between those who rely upon t
witness, he does not appear to have succeeded.[2] It is desi
ble for the truth's sake that good people be intelligent a
act in concert: nothing would be more capable of renderi
the human race better and happier, but it would be necessa
for them to be truly of the number of the good people, *i*
of the beneficent, and, further, docile and reasonable; inste

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[1] The Labadists were a mystic sect or community of the Reformed Chur
founded by Jean de Labadie, 1610–1674, a noted Pietist or Mystic, who, ori
nally a Roman Catholic, had become a Protestant, joined the Reformed Chur
and afterwards at the head of his separatist congregation at Middleb
developed his scheme for the reformation of that ecclesiastical body. H
doctrine was in many points similar to that of the Anabaptists. Laba
and his disciples wished to settle with A. Bourignon at Noordstrandt, but s
would not consent, saying: "I perceive and know that we can never ag
together. Their opinions and the spirit that governs them are altogether c
trary to my light and the spirit that governs me." Leibnitz refers to Laba
in the *Théodicée*, Discours prélim., § 14; in a letter to Theophilus Spiz
April 7, 1671, Dutens, 5, 351–352; *cf.* also, Guhrauer, *Leibnitz's deuts*
Schrift., 2, 498–499. For further account, *cf.* the writings of two of his m
enthusiastic disciples, Pierre Yvon, *Abrégé précis de la vie et de la cond*
et des vrais sentiments de feu M. de Labadie; Anna Maria v. Schürma
Eucleria (said to be, perhaps, the best exposition of his views), Altona, 16
1678; also Arnold, *Kirchen und Ketzerhistorie*, Theil. II., Buch. XVII., Ca
XXI., Vol. 1, pp. 1186–1200; Vol. 2, pp. 1302–1350; H. van Berkum, *De Laba*
en de Labadisten, Sneek, 1851; Goebel, *Gesch. d. christ. Lebens in d. rhei*
isch-westphälischen Kirche, Vol. 2, Coblentz, 1852; Heppe, *Gesch. d. Piet*
mus, Leyden, 1879; Ritsche, *Gesch. d. Pietismus*, Vol. 1, Bonn, 1880. — Tr.

[2] William Penn, 1644–1718, made a missionary journey through Holla
and Germany in 1671–1672, in the course of which he founded a Quaker soci
at Embden and became an intimate friend of the Princess Elizabeth of t
Palatinate, to whom Descartes dedicated his *Princip. Philos.* His lett
written during this journey contain a full account of the doctrine of t
"inward light." In 1677 he made another missionary journey to the Co
nent, and published in 1694 a full account of the same, entitled *Journal of*
Travels in Holland and Germany. Cf. A Collection of the Works of W
Penn, London, 2 vols., fol., 1726, Vol. 1, pp. 50–116; *Select Works*, 3d ed., Lo
don, 1782, 5 vols., 8vo, Vol. 3, pp. 373 *sq.* For short selections therefrom,
Janney, *Life of Wm. Penn*, chap. 9, pp. 125–137, 4th ed. revised, Phila., 18
for more extended extracts, *cf. Passages from the Life and Writings of W*
Penn, Phila., 1882, VIII., pp. 141–199. — Tr.

which only too many of those who are called devout to-day e accused of being severe, imperious, obstinate. Their dis- nsions make it appear at least that their internal witness eds an external verification in order to be believed, and mir- les would be necessary in order for them to have the right pass as prophets and inspired men. There might, however, a case where these inspirations would carry their proofs th them. This would be if they really enlightened the mind important discoveries of some extraordinary knowledge, ich without any external aid would be beyond the powers the person who should have acquired them. If Jacob ehme,[1] a famous shoemaker of Lusace, whose writings have en translated from German into other languages under the me of the Teutonic Philosopher, and in reality possess some- ing of grandeur and beauty for a man in this condition, had own how to make gold, as some are persuaded he did, or as . John the evangelist did, if we believe what is said in a mn[2] composed in his honor: —

> Inexhaustum fert thesaurum
> Qui de virgis fecit aurum,
> Gemmas de lapidibus,

ere would have been some reason for giving more credence this extraordinary shoemaker. And if Mademoiselle Antoi- tte Bourignon had furnished to Bertrand la Coste, a French gineer at Hamburg, the light in the sciences which he believed had received from her, as he indicated in dedicating to her s book on the Quadrature of the Circle (in which, making lusion to Antoinette and Bertrand, he called her the A in eology, as he said he himself was the B in mathematics), we ould not have known what to say.[3] But we do not see examples of a considerable success of this nature, nor well-detail predictions which have succeeded in the case of such perso The prophecies of Poniatovia,[1] of Drabitius and others, whi the good man Comenius[2] published in his "Lux in Tenebri and which contributed to the disturbances in the heredita lands of the emperor, were found false, and those who believ them were unfortunate. Ragozky, Prince of Transylvania, w impelled by Drabitius[3] to the attack upon Poland in which

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[1] *Cf. ante*, p. 298, note 1. — Tr.

[2] *Cf.* L. Gautier, *Œuvres Poétiques d'Adam de S.-Victor*, Paris, 1858, 2 ls., 12mo, Vol. 1, p. 229, and the editor's learned note; D. S. Wrangham, *e Liturgical Poetry of Adam of St. Victor, from the text of Gautier, with ns. into English in the original metres*, etc., 3 vols., London, Kegan ul, 1881, Vol. 1, p. 190. Leibnitz probably knew the hymn in Clichtoveus, *ucidatorium Ecclesiasticum*, Pt. IV., of which there were several editions m 1515–1556, at Paris, Basel, Geneva. — Tr.

[3] Bertrand de Lacoste, a French engineer, born early in the 17th century, o, after some service as colonel of artillery in the army of the Duke of andenburg, obtained his discharge in 1663 and retired to Hamburg, where devoted himself to the study of mathematics in general, and in particular

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to the problem of the quadrature of the circle. On this subject he publish two works: *Scheda de inventa quadratura circuli*, 1663, and, in reply t refutation of the same by Prof. Müller, *Démonstration de la quadrature cercle*, Hamburg, 1666, 4to, 1677, 8vo. A Flemish translation appeared 1677, with the title *Klarer Bewys von't Quadrat des Cirkels*, dedicated Antoinette Bourignon, whose person and teachings he for a time grea admired; but failing to interest her equally in his mathematical studies, finally opposed her and her doctrines as strongly as he had before advocat them, exciting the populace of Hamburg against her and forcing her leave the city. He wrote against her his *Scheda contra Ant. Bourignonia* — TR.

[1] Christine Poniatowa, 1610–1644, a famous enthusiast, the daughter o Polish noble and unfrocked monk, claimed in 1627–1628 that she had visi regarding the persecutions of the Evangelical Church which were soon to e in its triumph. Jan. 27, 1629, she fell into a lethargy so profound that th thought her dead; but at length awaking, she declared that her visions w ended, her mission complete. Chagrin at seeing her predictions denied last caused her death. She wrote out her revelations in the order in whi she said she had received them from heaven. Comenius (*cf. ante*, p. 4 note 2) translated them into Latin, and published them, together with th of Drabitius, Kotter, 1585–1647, and other enthusiasts, in his very rare *L in Tenebris*, 1650, 1657, 4to, 1659, with title *Historia revelationum Ch. Kotte Chr. Poniatoviæ, Nic. Drabitii, etc.* (the only ed. known to Bayle, and t least rare and complete), 1665, 2 vols., 4to, also several other eds., more less incomplete. The rarity of the work is due to the fact that Comeni fearing on the one hand to disobey a divine command if he refused to tra late these prophecies out of the Bohemian or Czech language in which th had first appeared, and on the other of covering himself with ridicule if t event not far distant did not verify them, allowed but few copies to be print For further account of Poniatowa, *cf.* Adelung, *Gesch. d. mensch. Narrhe* Vol. 6, pp. 231–267. — TR.

[2] *Cf. ante*, p. 466, note 2. The *Lux in Tenebris* appeared in 1650. — TR.

[3] Nicolas Drabitius or Drabicius, c. 1587–1671, a Bohemian-Moravian m ister at Drakatutz, who was compelled by the severity of the imperial edi against the Protestants to retire to Lednitz in Hungary, turned to secul pursuits, became very dissipated, and was suspended from the ministry. 1638 he claimed to be inspired and to have divine revelations, the chief which predicted the fall of the House of Austria in 1657, and the success of t expedition, which he urged upon Prince George II. Rakoczy of Transylvan against Poland in the same year. Both predictions failed. Prince Geor was totally defeated July 16, 1657, and compelled to fight the Turks, rous to hostility by his attack on Poland, till his death, June 26, 1660. The Hou

t his army, a result which finally cost him the loss of his
ates together with his life; and the poor Drabitius a long
ıe after, at the age of eighty years, at last had his head cut
by the order of the emperor. Yet I do not doubt that there
people now who cause these predictions to be revived inaptly
the present conjuncture of disorders in Hungary, not consid-
ng that these pretended prophets spoke of the events of their
ıe; in which respect they did almost as he who, after the
nbardment of Brussels, published a loose sheet, in which
re was a passage taken from a book of Mademoiselle Antoi-
te, who did not wish to come into this city because (if I
nember rightly) she had dreamed that she saw it on fire; but
s bombardment happened a long time after her death. I
ew a man who went to France during the war which was ter-
nated by the Peace of Nimwegen to importune M. de Mon-
sier[1] and M. de Pomponne[2] upon the trustworthiness of the
phecies published by Comenius; and he would himself have
ieved himself inspired (I think), if he had happened to make
propositions in a time parallel to ours. This shows not only
little foundation, but also the danger of these wayward-
sses. Histories are full of the bad effect of false or misunder-
od prophecies, as may be seen in a learned and judicious
sertation, "De officio viri boni circa futura contingentia,"
ich the late Jacobus Thomasius, a celebrated professor at
ipzig, formerly gave the public.[3] It is true, however, that

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Austria, resolving to rid itself of the pretended prophet, arrested him as
ate criminal, tried and condemned him to death. His head and right
d were cut off and burned with a copy of his books, and the ashes thrown
the Danube, July 17, 1671. For further account, *cf.* Adelung, *Gesch. d.*
sch. Narrheit, Vol. 2, pp. 27–62. — Tr.

Charles de Sainte-Maure, Marquis and then Duke de Montausier, 1610–1690,
hom Louis XIV., in 1668, entrusted the education of the Dauphin, then
n years of age, for whose instruction he edited the Delphine Classics and
ecueil de maximes morales et politiques. — Tr.

Simon Arnauld, Marquis de Pomponne or Pompone, 1618–1699, was am-
ador to Sweden under Louis XIV., and concluded the Peace of Nimwegen,
-1679. His *Mémoires de Marquis de Pomponne* appeared at Paris, 1861–
, 2 vols., 8vo. — Tr.

Jacob Thomasen, — Latin Thomasius, — 1622–1684, was for many years
fessor of Philosophy and Eloquence in the University of Leipzig, the
der of the scientific study of the history of philosophy in Germany, and
first to recommend disputed questions in this subject as themes for dis-
ations. He was Leibnitz's first teacher in philosophy, early discerned
eminent abilities and promise of his subsequently very distinguished

these persuasions sometimes produce a good effect and rend great service, for God can make use of error to establish maintain truth. But I do not believe that it is easily permitt us to make use of pious frauds for a good end; and as for t dogmas of religion, we have no need of new revelations; it enough that we propose to ourselves salutary rules in order th we may be obliged to follow them, although the one proposi them performs no miracle. And although Jesus Christ was p vided with miracles, he did not cease to refuse sometimes to p form them in order to please that perverse race who demand signs, when he preached only virtue and what had already be taught by natural reason and the prophets.[1]

pupil, taught him to take a broad and, for that time, critical view of history of philosophy, and introduced him early into the polemic against e piricism. The pupil regarded his teacher with reverent gratitude (*cf.* Le nitz's letters to Thomasius, April 20–30, 1669, Gerhardt, *Leibniz. Phi Schrift.*, 1, 15, 26–27; to J. Christ. Wolf, Dec. 11, 1711, Dutens, 5, 447, Korth *Leibnit. Epist.*, 1, 270; *Leibnit. Vita a Jac. Bruckero scripta*, § 3, Dute 1, LVIII.–LXI., and Brucker, *Philos. Historia*, 5, 336–340, Lipsiæ, 1742–17 and each prized the esteem and friendship of the other. Leibnitz sent T masius his own early works for criticism ("Neque vero laudem, sed exa peto," letter of April 20–30, 1669, G. 1, 27); Thomasius presided when L nitz defended his *De princ. indiv.* for the degree of Bachelor of Philoso (*cf. ante*, p. 239, note 1), and when it was published wrote the Preface (which *cf.* Dutens, 2, Pt. I., 11–14). For their correspondence, the preservat of Leibnitz's part of which we owe to the care of Thomasius, *cf.* Gerha *op. cit.*, 1, 1–39. Most important for the philosophy of Leibnitz, especially regards the beginning of his independent speculations, and as a statemen principles from which he never departed but simply worked out into clea and completer forms, is the letter of April 20–30, 1669, *cf.* G. 1, 15–27, E mann, 48–54, Dutens, 4, 7–19, also Guhrauer, *Leibniz' Dissert. de princ. ind* p. 33. Leibnitz refers frequently to Thomasius; *cf.* for example, *Théodi* Pt. II., §§ 184, 220.

The essay of Thomasius here referred to by Leibnitz is also cited, acc- ing to Schaarschmidt, under the title *De officio hominis circa notitiam fi- rorum contingentium*, and, in his opinion, is probably the same as the which Christian Thomasius, after his father's death, had printed in his *Dis- tationes LXIII. magnam partem ad historiam philosophicam et ecclesiastic pertinentes*, Halle, 1693, 8vo, as Programma XXXVI., p. 396, under the ti *De provisione circa futura contingentia.* Thomasius was the author great number of dissertations, full of research and written with purity elegance. One of them, *Origines historiæ philosophicæ et ecclesiasticæ*, L zig, 1665, 4to, ed. by Ch. Thomasius, Halle, 1699, 8vo, was for a long time most accurate history of ancient philosophy. Brucker was greatly indeb to it. — Tr.

[1] *Cf. ante*, pp. 553, note 1, 582. Leibnitz, while admitting the possibi and on sufficient and proper evidence the actuality of miracles, neverthe regards them from the philosophic point of view as exceptional and relati

CHAPTER XX

OF ERROR

1. *Ph.* After having spoken of all the means which make
know or divine the truth, let us also say something about
errors and bad judgments. Men must often be mistaken
e there are so many dissensions among them. The reasons
his may be reduced to these four: (1) the lack of proofs;
little skill in using them; (3) lack of will to make use of
n; (4) false rules of probability. § 2. When I speak of the
of proofs, I understand also those which we might find if
had the means and the opportunity, but this it is which we
t frequently lack. Such is the condition of men whose
is passed in seeking their subsistence: they are as little
rmed of what goes on in the world, as a draught horse who
ays goes by the same road may become skilled in the map
he country. They would require languages, reading, con-
ation, observations of nature and the experiments of art.
Now, all this not agreeing with their condition, shall we
then that the bulk of men are led to happiness or misery
by blind chance? Must they abandon themselves to the
ent opinions and authorized guides in the country, even as
rds eternal happiness or misery? Or will they be eternally
appy to have been born rather in one country than in
her? We must admit, however, that no one is so com-
ely occupied with the care of providing for his subsistence
have no time left to think of his soul and to be instructed
hat which concerns religion, if he were to apply himself
eto as he does to less important things.

h. Suppose that men are not always in a condition to
ruct themselves, and that not being able to give up with

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portant, and emphasizes, as here, the view that the essence of Christianity
sts in its ethical content, a content intrinsically rational and accordant
nature. In addition to the authors referred to, *ante*, p. 553, note 1, *cf.*
er, *Gesch. d. christ. Religionsphilos.*, 1, 359–360, 372–375, Eng. trans.,
15, espec. 485–486, 501–504; and for an acute and able discussion of
les, their idea, office, etc., *cf.* E. G. Robinson, *Christian Theology*, § 20,
03–109, Rochester, N. Y., Press of E. R. Andrews, 1894. — Tr.

prudence the care of the subsistence of their family in ord to investigate difficult truths, they are obliged to follow t opinions authorized among them, it will always be necessa to judge that in the case of those who have the true religi without having its proofs, internal grace will supply the la of the motives of credibility, and charity makes us also jud as I have already indicated to you, that God does for perso of good will, brought up among the thick darkness of the m dangerous errors, all that his goodness and justice deman although perhaps in a way which is unknown to us. We ha histories commended in the Roman church of persons who ha been expressly raised up in order that salutary aid be not wa ing. But God can assist souls by the internal operation the Holy Spirit, without the need of so great a miracle; a because it is good and consoling for the human race to put its in the condition of the grace of God, only the good but sinc and serious will is needed. I admit that we have not inde this good will without the grace of God, forasmuch as natural or supernatural good comes from him; but it is alwa enough that we must only have the will, and that it is imp sible that God can demand a condition easier and more reas able.

§ 4. *Ph.* There are those who are *sufficiently at their ease* have all the opportunities suited to illumine their doubts; they are deterred from this by obstacles full of craftiness, wh it is easy enough to see, while it is not necessary to display th in this place. § 5. I prefer to speak of those who lack the sk to avail themselves of the proofs which they have, so to spe under their hand, and who cannot retain a long course of ar ment nor weigh all the circumstances. There are some peo of a single syllogism, and there are some of two only. Thi not the place to determine whether this imperfection arises fr a natural difference of the souls themselves or of the organs whether it depends upon the lack of exercise which polishes natural faculties. It is sufficient for us here that it is visil and that we have only to go from the palace or from exchange to the hospitals and small houses to perceive it.

Th. It is not the poor alone who are needy; certain r people lack more than they, because these rich people dem too much and put themselves voluntarily in a kind of pove ich hinders them from applying themselves to important con-erations. Example does much here. One tries to conform hat of his equals, so that he is compelled to practise without wing a spirit of perverseness, and that makes it easy for him ecome like them. It is very difficult to satisfy at the same e reason and custom. As for those who lack capacity, they fewer perhaps in number than you think; I think that d sense with application can suffice for everything which s not demand promptness. I presuppose good sense, be-se I do not think you would demand the search for truth m the dwellers in small houses. It is true that there are many who could not learn something of it, if we knew the ns of so doing and what original difference exists between souls (as I believe does in reality exist); it is always cer-that one soul might go as far as another (but not perhaps apidly) if it were led as it should be.

6. *Ph.* There is another sort of people who lack only will. trong attachment to pleasure, a constant application to what cerns their fortune, a general idleness or negligence, a par-lar aversion to study and meditation, prevents them from king seriously of the truth. There are even some who r that a research free from all partiality would not be fa-able to the opinions which most suit their prejudices and ns. We know persons who will not read a letter which y suppose brings bad news, and many people avoid agreeing n their accounts or informing themselves of the state of ir property, for fear of learning what they would desire ays to be ignorant of. There are some who have large rev-es and employ them all in provisions for the body without aming of the means of perfecting the understanding. They e great care always to appear in a suitable and brilliant ipage, and they suffer without difficulty their soul to be ered with the wretched rags of prejudice and error, and its edness, *i.e.* its ignorance to appear as an eccentricity. Not speak of the interest they ought to take in a future state, y do not in the least neglect what they are interested to w in the life they lead in this world. And it is strange t very often those who regard power and authority as an anage of their birth or their fortune, carelessly abandon it to ple of a condition inferior to theirs, but who surpass them

in knowledge. For it is very necessary that the blind be l by those who see, lest they fall into the ditch, and there is worse slavery than that of the understanding.

Th. There is no more evident proof of the negligence of me as regards their true interests, than the little care they take know and practise what agrees with their health, which is o of our greatest blessings; and although the great feel as muc and more than others the bad effects of this negligence, the do not alter their course. As far as faith is concerned, man regard the thought which would lead to its discussion as temptation of the devil, which they think they can the bett surmount only by turning their minds to an entirely differe thing. Men who only love pleasure, or who are attached some occupation, are wont to neglect other matters. A playe a hunter, a drinker, a debauchee, and even a man curious abo trifles, will lose his fortune and his property for lack of givi himself the trouble to institute a process or to speak to t men in a guard-house. There are some like the Emper Honorius, who, when the news of the destruction of Ro was brought to him, thought it was his hen who bore th name, and this offended him more than the truth.[1] It desirable that men who have power have knowledge in pr portion; but if the details of the sciences, of the arts, history and languages, should not be theirs, a solid and pra tised judgment and a knowledge of things equally great an general, in a word, *summa rerum*, might suffice. And as th Emperor Augustus had an abstract of the forces and needs the State which he called *Breviarium Imperii*, he might ha an abstract of human interests which would deserve to be calle *Enchiridion Sapientiæ*, if men would care for that which is most importance to them.

§ 7. *Ph.* Finally, the majority of our errors arise from th *false measures of probability* which we take, whether by su ding our judgment in spite of manifest reasons, or in giving otwithstanding contrary probabilities. These false measures sist (1) in doubtful propositions taken as principles, (2) in accepted hypotheses, (3) in the dominant passions or incli- ions, (4) in authority. § 8. We ordinarily judge of truth by conformity with what we regard as indisputable principles, l this makes us despise the testimony of others and indeed our own senses when they appear contrary thereto: but ore relying upon these with so much assurance, we should mine them with the utmost exactness. § 9. Children receive propositions taught them by their father and mother, nurses, chers and others who are about them, and these propositions ving taken root, are regarded as sacred as a *Urim* and *Thum- n* which God might himself have put in the soul. § 10. have some difficulty in admitting that which clashes with se *internal oracles,* while we believe the greatest absurdities ich agree with them. This appears in the extreme obstinacy ich we notice in different men who believe strongly opinions directly opposed as the articles of faith, although they are y often equally absurd. Take a man of good sense, but per- ded of this maxim *that he must believe what they of his mmunion believe*, as they teach at Wittenberg or in Sweden, at disposition has he not to receive without difficulty the trine of *consubstantiation,* and to believe that one and the ne thing is flesh and bread at the same time.

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[1] The anecdote here mentioned by Leibnitz is thus given by Giovanni Ba tista Egnazio, 1473–1553, in his *De Romanis principibus*, Lib. III., Venic 1516, near the end of Book I. (*cf.* Haurisius, *Scriptores historiæ Roma Latini veteres, quæ extant omnes*, Heidelberg, 1743–1745, 3 vols., fol., Vol. p. 625): "Quum nuntiatum Honorio esset Ravennæ *Romam perditam*, cr didit ille de pugnaci Gallo, cui nomen erat Romæ, significatum esse: admir tumque vehementer tam subito periisse eum quo cum paullo ante festivissin luserat." — Tr.

Th. It is very apparent, sir, that you have not been suffi- ntly instructed in the views of the Evangelicals,[1] who admit real presence of the body of our Lord in the Eucharist. ey have explained a thousand times that they do not mean consubstantiation of bread and wine with the flesh and blood Jesus Christ, and still less that one and the same thing is h and bread at the same time. They teach only that, in eiving the visible symbols, we receive in an invisible and ernatural manner the body of our Saviour, without its being losed in the bread; and the presence which they mean is local or spatial, so to speak, *i.e.* determined by the dimen- ns of the present body, so that all that the senses can oppose

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[1] *I.e.* Lutherans. For the views and controversies regarding the Eucharist, the Confessions alluded to in the remainder of this section, *cf.* the various rch Histories and Histories of Doctrine. — Tr.

to it does not concern them. And in order to show that th
inconveniences which may be derived from reason no longe
affect them, they declare that what they mean by the substanc
of the body does not consist in extension or dimension; an
they make no difficulty in admitting that the glorious body o
Jesus Christ preserves a certain ordinary and local presence
but congruous with his position in the exalted place where h
is found, altogether different from this sacramental presenc
herein questioned, or from his miraculous presence by which h
governs the church, which causes him to be not everywher
like God, but there where he prefers to be. This is the view o
the more moderate, so that, in order to show the absurdity o
their doctrine, it would be necessary to show that the entir
essence of the body consists only in extension, and in tha
which is solely measured thereby, which no one, so far as
know, has yet done. This whole difficulty also concerns no
less the Reformers who follow the Gallican and Belgian confe
sions, the declaration of the Council of Sendomir, composed o
people of the two confessions, Augustan and Swiss, conforme
to the Saxon confession, destined for the Council of Trent; th
profession of faith of the Reformers who came to the Conferenc
of Thorn, convoked under the authority of Vladislas, King o
Poland, and the constant doctrine of Calvin and of Beza, who hav
declared the most distinctly and the most strongly of everybod
that the symbols really furnish what they represent, and tha
we become participants in the body and blood of Jesus Christ
Calvin, after having refuted those who content themselves wit
a metaphorical participation of thought or of seal and with
union of faith, adds that we can say nothing sufficiently stron
to establish its reality, that he is not ready to subscribe to, pro
vided we avoid everything which looks to the circumscriptio
of place or the diffusion of dimension; so that it appears tha
at bottom his doctrine was that of Melanchthon and even o
Luther (as Calvin himself conjectured in one of his letters)
except that in addition to the condition of the perception of th
symbols with which Luther contents himself, he demands als
the condition of faith, in order to exclude the participation o
the unworthy. I have found Calvin so positive upon this rea
communion in a hundred places in his works, and even in hi
familiar letters, where there was no need of being so, that I d
not see any reason to suspect artifice.

§ 11. *Ph.* [I ask your pardon if I have spoken of these gentle-
en according to the common opinion. I remember now hav-
g remarked that some very clever theologians of the Anglican
urch have been for this real participation. But from estab-
hed principles let us pass to the *accepted hypotheses.* Those
o admit that they are only hypotheses often cease not to
aintain them with warmth, almost as if assured principles,
d to despise contrary probabilities. It would be unendurable
a learned professor to see his authority overturned in an
stant by a new comer who should reject his hypotheses; his
thority, I say, which has been in vogue for thirty or forty
ars, acquired by much labor at night, sustained by much
reek and Latin, confirmed by a general tradition and by a
nerable beard. All the arguments which we can employ to
nvince him of the falsity of his hypothesis will be as little
pable of prevailing upon his mind as the efforts Boreas made
compel the traveller to leave his cloak, which he held so
uch the more firmly as the wind blew with more violence.

Th. In reality the Copernicans have experienced in the case
their adversaries that hypotheses recognized as such ceased
t to be maintained with an ardent zeal; and the Cartesians
e not less positive regarding their grooved particles and little
lls of the second element[1] than if they were the theorems of
iclid; and it seems that zeal for our hypotheses is merely a
sult of the passion we have of making ourselves respected.
is true that those who condemned Galileo believed that the
st of the earth was more than an hypothesis, for they judged
in conformity with Scripture and reason. But since then it
s been perceived that reason at least sustained it no longer;
d as for Scripture, Father Fabry, Penitentiary of St. Peter,
excellent theologian and philosopher, publishing in Rome
elf an Apology for the Observations of Eustachio Divini,[2]

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[1] *Cf. New Essays*, Preface, *ante*, p. 51, line 11; Descartes, *Princip. Philos.*,
. III., §§ 52, 90. The "grooved particles" and "little balls of the second
ment" are a part of the vortices-theory (*cf. ante*, p. 552, note 1). For the
natter of the first and second element" and the genesis of the "perfect
obes" or "balls of the second element," *cf. Princip. Philos.*, Pt. III., § 48 *sq.*
e notes of J. H. von Kirchmann in his German trans. of this work of Des-
tes (*Philos. Bibliothek.*, Vol. 26, 2d ed., Heidelberg, 1887) are a valuable
l in the study of the theory. — Tr.

[2] Eustachio Divini, c. 1620 — c. 1666, an Italian mechanician, optician, and
ronomer, noted for his skill in making optical instruments, especially tel-

a famous optician, hesitated not to declare that it was only provisionally that they understood in the sacred text a true movement of the sun, and that if the view of Copernicus were foun true, there would be no difficulty in explaining it in like manner as this passage of Vergil:

terræque urbesque recedunt.[1]

However, they did not cease to continue in Italy and in Spai and even in the hereditary states of the emperor to suppres the doctrine of Copernicus, to the great detriment of these nations whose scholars might have raised themselves to mor beautiful discoveries had they enjoyed a reasonable and philosophic liberty.

§ 12. *Ph.* The dominant passions appear to be in reality, a you say, the source of the love we have for hypotheses: bu they also extend very much farther. The greatest probability in the world will avail nothing in showing his injustice to an avaricious and ambitious man; and a lover will have every facility in the world for allowing himself to be duped by his mistress, so long as it is true that we easily believe whatever we wish, and according to the remark of Vergil,

qui amant ipsi sibi somnia fingunt.[2]

This is what makes them make use of two *means of escaping* the most apparent *probabilities* when they attack our passions and our prejudices. § 13. The first is to think that there may be some sophistry concealed in the argument which they oppose to us. § 14. The second in supposing that we might put beforehand wholly as good or even better arguments in order to beat the adversary, if we had the opportunity, or skill, or aid, which

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escopes, was the reputed author of a little work entitled *Brevis annotatio in Systema Saturnium Christiani Hugenii* [Hag. Com., 1659, 4to], Rome, 1660, 8vo, in which an attempt was made to refute Huygens' theory of the planet Saturn. Divini, however, was no Latinist, and probably had little share in the book, contributing merely "his pretended observation of the three separate bodies"; the real author was most likely the Jesuit, Honoré Fabri (*cf. ante*, p. 586, note 2). Huygens reprinted the work together with his reply, *Brevis assertio systematis Saturnii sui*, Hag. Com., 1660; and Divini published his rejoinder, *Septempedanus pro sua annotatione in syst. Saturn. Ch. Hugenii, adversum ejus assertionem*, Rome, 1661. On the whole subject, *cf.* Huygens, *Œuvres complètes*, La Haye, 1888–1893, 5 vols., *passim*. — Tr.

[1] *Æn.* 3, 72. — Tr.

[2] *Eclog.* 8, 108. — Tr.

must have to discover them. § 15. These means of shield-g themselves from conviction are sometimes good, but they e also sophisms when the matter is sufficiently explained and erything has been taken into account; for after that there e means of knowing with regard to all upon what side the obability is found. Thus there is no room for doubting that e animals have been formed by the movements of an intelli-nt agent, rather than by a fortuitous concourse of atoms; as ere is no one who doubts in the least whether the characters printing which form an intelligent discourse have been ought together by an attentive man, or by a confused medley. should think then that it does not depend upon us to suspend r assent in these instances; but we can give it when the obability is less evident, and we can even content ourselves th more feeble proofs which better agree with our inclina-n. § 16. It appears to me impracticable for the truth for a an to lean to the side upon which he sees the less probability; rception, knowledge and assent are not arbitrary, as it does t depend upon me to see or not to see the agreement of two eas, when my spirit is turned toward them. We can how-er voluntarily arrest the progress of our researches; without is ignorance or error could not in any case be a sin. It is in is that we exercise our liberty. It is true that in the in-ances where we have no interests, we embrace the common inion, or the view of the first comer; but in the points where r happiness or misery is concerned, the mind applies itself ore seriously to weighing the probabilities, and I think that this case, that is, when we are attentive, we have no choice determining ourselves for the side we prefer, if between the o sides there are differences at once visible, and that it will the greatest probability that will determine our assent.

Th. I am of your opinion at bottom, and we have given fficient explanation upon this matter in our preceding con-rences when we spoke of liberty. I showed then that we ver believe what we wish, but rather what we see is the most parent; and that nevertheless we can make ourselves believe directly what we wish by turning away the attention from a sagreeable object in order to apply ourselves to another which eases us. This makes us in regarding more the reasons of favorite side believe at last the more probable. As for the opinions in which we take little interest and which we receive upon slight reasons, we do this because, noticing scarcely anything which opposes them, we find that the opinion which makes us regard them favorably surpasses as much or more the opposite opinion, which has nothing in its behalf in our perception, as if it had had many reasons on both sides, for the difference between 0 and 1, or between 2 and 3, is as great as between 9 and 10, and we perceive this advantage, without thinking of the examination which would still be necessary in order to judge, but to which nothing impels us.

§ 17. *Ph.* The last false measure of probability that I intended to notice is *improperly understood authority*, which keeps more people in ignorance and error than all the others together. How many people we see who have no other basis for their views than the opinions received among our friends or among the members of our profession or of our party, or of our country! Such a doctrine has been approved by venerable antiquity; it comes to me under the passport of preceding centuries; other men yield to it; this is why I am shielded from error in receiving it. We have as much authority for tossing up in order to take these opinions, as to take them upon the basis of such rules. And besides the fact that all men are liable to error, I believe that if we could see the secret motives which actuate the scholars and chief men of a sect, we should find often something wholly different from the pure love of the truth. It is certain at least that there is no opinion so absurd that it cannot be embraced upon this basis, since there is scarcely an error which has not had its partisans.

Th. It must, however, be admitted that in many instances we cannot avoid yielding to authority. St. Augustine has produced quite a remarkable book "De utilitate credendi,"[1] which deserves to be read on this subject, and as for the received opinions, they have for themselves something approaching to that which gives what is called *presumption* with the jurisconsults: and although we are not obliged to follow them always without proofs, we are no more authorized to destroy them in the mind of another without having contrary proofs. This it is which does not allow us to change anything without reason.

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[1] *Cf. Opera*, Benedictine ed., Vol. 8, pp. 45–70, Paris, 1688; Migne, *Patrol. s. Lat.*, Vol. 42 [Vol. 8 of Augustine], pp. 65–92. — Tr.

'ie argument drawn from the great number of the approvers an opinion has been much disputed since the late M. Nicole iblished his book on the church:[1] but all that may be drawn om this argument, when the question is of approving a reason d not of attesting a fact, may be reduced merely to what I ve just said. And as one hundred horses do not run faster an one horse, though they can draw more, so it is with one mdred men as compared with one single man: they cannot more justly, but they will work more effectively: they canot judge better, but they will be capable of furnishing more atter upon which the judgment may be exercised. This is e meaning of the proverb: *plus vident oculi quam oculus.* We otice it in the councils, where really a multitude of considerans are put upon the carpet which would perhaps escape one two, but they run a risk often of not taking the better side concluding upon all these considerations, when there are skilful persons charged with directing and weighing them. ence some judicious theologians of the Roman party, seeing at the authority of the church, *i.e.* that of the most exalted dignity and the most supported by the multitude, could not certain in a matter of reasoning, have reduced it to the mere testation of the facts under the name of tradition. This was e opinion of Henry Holden,[2] an Englishman, doctor of the orbonne, author of a book entitled "Analysis of the Faith," which, following the principles of the "Commonitorium" of incent de Lerins,[3] he maintained that we cannot make new

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[1] *Cf. ante,* p. 530, note 1. — Tr.

[2] Henry Holden, 1596–1662, was an English Roman Catholic divine, who aduated at the Sorbonne, and was appointed Professor of Theology there. 1647 he petitioned the House of Commons for toleration of the Catholics, ovided they would take the oath of allegiance. His *Divinæ Fidei Analysis,* concise exposition of the Catholic articles of faith as distinguished from atters of opinion, appeared at Paris, 1652, with an appendix consisting of a ort treatise on Schism. It was reprinted at Paris, 1685, 1767, at Cologne, 55, 1782. Eng. trans., by "W. G.," 1658. Dupin, who gives a full abstract the book in his *Bibl. des Aut. ecclés.,* 1711, tom. 17, pp. 194–203, considers m one of the ablest controversialists of his time. In 1656 he was engaged a controversy with Antoine Arnauld, the Jansenist (*cf. ante,* p. 463, note 4), d his letters to Arnauld were printed in later editions of the *Analysis.* — Tr.

[3] St. Vincent of Lerins, of Gallic origin, who died about 450. His *Adversus rofanas omnium novitates Hæreticorum Commonitorium,* written in 434, ree years after the Council of Ephesus, energetically affirms the authority tradition against all religious and doctrinal innovations. In chap. 2 of this ort treatise occurs the famous threefold test of orthodoxy: "Quod semper,

decisions in the church, and that all the bishops assembled i council can do is to attest the fact of the doctrine received ir their dioceses. The principle is specious so long as we continu in generalities; but when we come to the fact, it is found tha in different countries different opinions have been received fo a long time; and in the same countries also they have gon from one extreme to another, notwithstanding the argument of Arnauld against insensible changes; besides often withou confining themselves to attest them, they have taken it upo themselves to judge. It is also at bottom the opinion of Gretser,[1] a learned Jesuit of Bavaria, author of another Analysis o Faith, approved by the theologians of his order, that the church may judge controversies by making new articles of faith, since the assistance of the Holy Spirit is promised it, although most frequently they try to disguise this view, especially in France, as if the church were only to explain doctrines already established. But the explanation is a statement already received, or a new one which they believe may be drawn from the received doctrine. Practice is most frequently opposed to the first sense, and in the second, what can the new statement which is established be but a new article? I am not, however, of the opinion that we despise antiquity in the matter of religion; and I also believe that we may say that God has preserved the truly ecumenical councils hitherto from all error contrary to wholesome doctrine. For the rest, sectarian prejudice is a strange thing. I have seen people embrace with ardor an opinion for the sole reason that it is received in their order, or even solely because it is contrary to that of a man of a religion or of a nation which they do not like, although the

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quod ubique, quod ab omnibus creditum est." The work has been edited by Baluze, Paris, 1663, 1669, 1684, Klüpfel, Vienna, 1809, Pusey, Oxford, 1838, Herzog, Breslau, 1839, and others; Eng. trans. by Flower, London, 1866. See also Migne, *Patrol. Theol. cur. compl.*, Vol. 1, p. 911, Paris, 1846. A full account of it is given in Smith-Wace, *Dict. of Christ. Biog.*, 4, 1154–1158. — Tr.

[1] Jac. Gretser, 1561–1625, a learned Jesuit, was Professor of Philosophy and various parts of Theology at Ingolstadt for twenty-four years. A man of immense erudition, and a voluminous author, he was lacking in taste and critical power, and was very harsh and bitter in discussion. It is said of him that, when asked by the magistrates of Marckdorf in Swabia, his birthplace, for his portrait to be placed in the town hall, he refused it, saying they had no place therein for the head of an ass. His complete works appeared at Ratisbonne, 1739 *sq.*, 17 vols., fol. — Tr.

estion had almost no connection with the religion or the terests of the people. They did not know perhaps what was reality the source of their zeal; but I knew that, upon the st news that such an one had written this or that thing, they uld ransack the libraries and puzzle their brains to find mething to refute it. This it is which is practised so often those who maintain theses in the universities and who seek distinguish themselves against their adversaries. But what all we say of the doctrines prescribed in the Symbolic books the sect, even among[1] the Protestants, which we are often liged to embrace with an oath? which some think signi-s with us only the obligation to profess what these books formularies contain of Holy Scripture; in which they are ntradicted by others. And in the religious orders of the man party, without contenting themselves with the doctrines tablished in their church, they prescribe narrower limits to ose who teach them; witness the propositions the teaching which in their schools the General of the Jesuits, Claudio quaviva[2] (if I am not mistaken), defends. It would be well mention it in passing) to make a systematic collection of e propositions determined and censured by councils, popes, shops, superiors, faculties, which would be of use in ecclesi-tical history. We may distinguish between teaching and bracing an opinion. There is no oath in the world nor pro-bition which can force a man to abide in the same opinion, r opinions are involuntary in themselves: but he may and ould abstain from teaching a doctrine which is regarded as ngerous, unless he finds himself compelled thereto by his nscience. In this case he must declare himself sincerely and ave his post when he has been charged with teaching; sup-sing, however, that he can do so without exposing himself an extreme danger which might force him to leave without fame. We see but little other means of reconciling the righ of the public and of the individual; the one being under obl gation to prevent what it judges bad, and the other not bein able to dispense with the duties demanded by his conscience.

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[1] Gerhardt, Erdmann, and Jacques read: "parmi"; Janet reads: "par," . "by." — Tr.

[2] Claudius Aquaviva, 1543–1615, General of the Jesuits, 1581–1615. For a ef account of his *Ratio Studiorum*, 1599, *cf.* Hughes, *Loyola and the Edu-ional System of the Jesuits*, pp. 141 *sq.* (in The Great Educators Series, ed. Nicolas Murray Butler), New York: Chas. Scribner's Sons, 1892. For the t of the *Ratio*, and a full account of its growth from its preliminary to its al form, with the letters of Aquaviva and other documents, *cf.* *Monumenta rmaniæ Pædagogica*, Berlin, A. Hofmann & Co., 1886 *sq.*, Bd. V., Tom. II. Tr.

§ 18. *Ph.* This opposition between the public and the ind vidual and even between the public opinions of different sec is an inevitable evil. But often these very oppositions are onl apparent and consist only in the formulas. I am obliged als to say, in order to be just to the human race, that there are n so many people involved in error as is ordinarily suppose Not that I think that they embrace the truth, but because i reality upon the doctrines upon which they make so much sti they have absolutely no positive opinion, and because withou having examined anything and without having in the mind th most superficial ideas upon the matter in question, they ar resolved to hold themselves fast to their party, as soldiers wh do not examine the cause they defend: and if the life of a ma shows that he has no sincere regard for religion, it is sufficien for him to have the hand and tongue ready to maintain th common opinion, in order to commend himself to those who ca procure him support.

Th. This justice which you render to the human race doe not redound to its praise; and men would be more excusable i following their opinions than in disguising them for the sak of their interests. Perhaps, however, there is more sincerity i their deeds than you seem to give any one to understand. Fo without any knowledge of a reason, they can perhaps attain t an *implicit faith* by submitting themselves in general and sometimes blindly, but often in good faith, to the judgment of other whose authority they have once recognized. It is true that th interest they find therein contributes to this submission, bu this does not prevent them at last from forming an opinion They are contented in the Roman church with this almos implicit faith, not perhaps having any article thereupon, due t the revelation which is judged absolutely *fundamental* theret and which is considered as necessary *necessitate medii, i.e.* the belief of which is a condition absolutely necessary to salvation And they are all *necessitate præcepti*, by the necessity therei taught of obeying the church, as they call it, and of giving al attention to that which is proposed therein, all under pain o

rtal sin. But this necessity demands only a reasonable docil-
and does not compel absolute assent, according to the most
rned doctors of this church. Cardinal Bellarmine himself
ieved, however, that nothing was better than this faith of a
ld who submits himself to an established authority, and he
ates with approval the statement of a dying man, who escaped
devil by this circle, which they heard him often repeat:

> I believe all that the church believes,
> The church believes what I believe.

CHAPTER XXI

OF THE DIVISION OF THE SCIENCES

1. *Ph.* Here we are at the end of our course, and all the
rations of the understanding are explained. Our purpose is
to enter into the detail indeed of our knowledge, yet it will
haps be proper here, before we conclude, to make a general
iew by considering the division of the sciences. All that
enter into the sphere of human understanding is either the
ure of things in themselves, or in the second place, man in the
racter of an agent, tending towards his end and in particular
ards his happiness, or in the third place the means of acquir-
and communicating knowledge. *Science* then is divided
o three kinds. § 2. The first is *Physics* or Natural Philoso-
, which comprises not only bodies and their properties, as
nber, figure, but also spirits, God himself and the angels.
. The second is *Practical Philosophy* or *Ethics*, which teaches
means of obtaining good and useful things, and proposes to
lf not only the knowledge of the truth, but also the practice
that which is right. § 4. Finally, the third is *Logic* or the
owledge of signs, for λόγος signifies word. We need *signs* of
ideas to enable us to communicate our thoughts to one
other, as well as to register them for our own use. Perhaps
ve should consider distinctly and with all possible care that
s last kind of science revolves about ideas and words, we
uld have a logic and criticism[1] different from that which has

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Locke has: "critic," *Philos. Wks.*, Vol. 2, p. 338, Bohn's ed.; Fraser,
ke's Essay concerning Human Understanding, Vol. 2, p. 462. — Tr.

hitherto been seen. And these three kinds, Physics, Ethi and Logic, are like three great provinces in the intellectu world, entirely separate and distinct the one from the other.

Th. This division has already been a celebrated one amo the ancients; for under *Logic* they comprised, as you do, a that relates to words and to the explication of our thought *Artes dicendi.* Nevertheless, there is some difficulty therei for the science of reasoning, of judgment, of invention appea very different from the knowledge of the etymologies of wor and the use of languages, which is something indefinite a arbitrary. Farther, in explaining words, we are obliged to mal an incursion into the sciences themselves, as appears by th dictionaries; and on the other hand, we cannot treat of scien without giving at the same time definitions of the terms. B the principal difficulty found in this division of the sciences that each part appears to absorb the whole; in the first plac Ethics and Logic will fall into Physics, taken as generally you have just stated; for in speaking of spirits, *i.e.* of su stances having understanding and will, and in explaining th understanding to the bottom, you will make it include all logi and in explaining in the doctrine of spirits what belongs to th will, it would be necessary to speak of good and evil, of hap ness and misery, and it will only depend upon you to push th doctrine far enough to make it include all practical philosoph In return, all might be included in practical philosophy as ser ing for our happiness. You know that Theology is rightly co sidered as a practical science, and Jurisprudence as well a Medicine are not less so; so that the doctrine of human happ ness or of our good and ill will absorb all these branches knowledge, should we desire to explain sufficiently all the mear serving the end which reason proposes to itself. Thus it that Zwinger has included all in his "Magnum theatrum vit humani," which Beyerling has disturbed by arranging in alph betical order.[1] And in treating all matters in dictionaries fo

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[1] Laurent Beyerlinck, or Beierlynck, 1578–1627, a Flemish scholar, Profess of Poetry and Rhetoric at Vaulx, and Canon of the Antwerp Cathedral, pu lished, with additions and corrections, the *Theatrum vitæ humanæ* of Zwing (*cf. ante*, p. 548, note 1), with the title *Magnum theatrum vitæ human* Cologne, 1631, 8 vols., fol. Schaarschmidt states that this new edition i alphabetical order is, in fact, worth less than the old redaction of the bool which handled the materials systematically in their essential aspects.—Tr.

ing the order of the alphabet, the doctrine of languages
ich you with the ancients put in *Logic*), *i.e.* in discursive
ic, takes possession in its turn of the territory of the two
ers. Here, then, your three great provinces of encyclopedia
in continual war, since one is always encroaching upon the
ts of the others. The Nominalists believed that there were
many particular sciences as truths,[1] which they composed
er the wholes according as they arranged them; and others
pare the entire body of our knowledge to an ocean, which
ll of a piece and which is divided into Caledonian, Atlantic,
hiopic, Indian only by arbitrary lines. It is usually found
t one and the same truth may be put in different places,
ording to the terms it contains, and also according to the
liate terms or causes upon which it depends, and according
he inferences and results it may have. A simple categoric
position has only two terms; but a hypothetic proposition
y have four, not to speak of complex statements. A remark-
e history may perhaps be placed in the annals of universal
ory and in the history of the country where it happened,
in the history of the life of a man who was interested
rein. And suppose the question therein concerns some fine
cept of morals, some stratagem of war, some invention use-
in the arts which serve the conveniences of life or the health
nen, this same history will be related to some purpose in the
nce or art it concerns, and indeed it can be mentioned in
parts of this science, viz., — in the history of the discipline
rder to recount its efficient growth, and also in the precepts
onfirm them or illuminate them by examples. For example,
t is very properly told in the life of Cardinal Ximenes, that
oorish woman cured him by rubbings only of a hectic almost
perate, deserves also place in a system of medicine, as well
he chapter on hectic fever, as when the question concerns a

The phrase "as many sciences as truths" — "tot esse scientias quot veri-
;" — is, as Schaarschmidt says, "the sharpest expression of nominalistic
vidualism." "According to Nominalism, we have a knowledge of partic-
s only, all universals being merely *figmenta mentis*, products of abstrac-
Hence true and genuine science always relates to particulars only, and
there are as many sciences as (particular) truths."
n Leibnitz's studies of Nominalism, *cf.* Guhrauer, *Leibnit. Dissertatio de*
c. *individ.*, pp. 39 *sq.*, Leibnitz, *De stilo philos. Nizolii*, § 28, Gerhardt,
7-158, Erdmann, 68-69. — Tr.

medicinal diet comprising these exercises; and this observati
will serve also the better to discover the causes of this diseas
But we might further speak of this in medicinal logic, whe
the question is about the art of discovering remedies, and in t
history of medicine, in order to show how remedies have co
to the knowledge of men, and that it is often by the aid of si
ple empirics and even charlatans. Beverovicius,[1] in a remar
able book on ancient medicine, drawn wholly from authors n
physicians, would have rendered his work still more useful,
he had passed down to modern authors. We see by this th
one and the same truth may have many places according to t
different relations it can have. Those who arrange a libra
very often do not know where to place certain books, being
suspense between two or three places equally suitable. B
let us now speak only of general doctrines and put aside part
ular facts, history and languages. I find two principal disp
sitions of all doctrinal truths, each of which should have i
deserts and which it would be well to unite. The one wou
be *synthetic* and *theoretic*, ranking truths according to the ord
of proofs, as the mathematicians do, so that each propositi
would come after those on which it depends. The other disp
sition would be *analytic* and *practical*, commencing with the e
of men, *i.e.* with the goods whose consummation is happine
and seeking in order the means available for acquiring the
goods or avoiding the contrary evils. These two methods ha
place in general encyclopedia, while some have practised the
in particular sciences; for geometry itself, treated synthetical
by Euclid as a science, has been treated by some others as
art, and might nevertheless be treated demonstratively und
this form, which would show indeed some invention; as if so

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[1] Jan van Beverwyck, — Latin Beverovicius, — 1594–1647, a noted Dut
physician, who studied at Leyden, Caen, Paris, Montpelier and Padua, wh
he received his M. D., and on his return became Professor of Medicine at D
drecht and physician to the city, in which also he held several civil offic
among them that of burgomaster. He labored to simplify the methods of p
scribing for disease. He published a number of books distinguished for pur
of style and relation of facts, and which, adorned with copper-plates and w
the verses of Jakob Cats, 1577–1660, one of the oldest and most popular Dut
poets, "made in his time much sensation and met with much approbatio
Among them was the *Idea medicinæ veterum*, Lugd. Bat., 1637, 12mo, h
mentioned by Leibnitz. His entire works were published at Amsterda
1651, etc. — Tr.

proposed to measure all kinds of plane figures, and begin-
with rectilinears, reflected that they may be divided into
ngles and that each triangle is half of a parallelogram, and
parallelograms can be reduced to rectangles whose measure
asy. But in writing the encyclopedia, following both these
dispositions together, we might take measures for references
rder to avoid repetitions. To these two dispositions *the third*
rding to the terms should be joined, which in reality would
only a kind of *index*, either systematic, arranging the terms
ording to certain predicaments which would be common
ll the notions, or alphabetical according to the languages
eived among scholars. Now this index would be necessary
order to find together all the propositions into which the
en enters in a sufficiently remarkable manner; for according
he two preceding ways, where the truths are arranged accord-
to their origin or use, truths concerning one and the same
en cannot be found together. For example, it was not per-
ted Euclid, when he was teaching how to find the half of an
le, to add the means of finding its third, because he would
e been obliged to speak of the conic sections, knowledge of
ch he could not yet assume in this place. But the index
y and should indicate the places where are found the impor-
t propositions which concern one and the same subject. And
still lack such an *index* in geometry, which would be of great
in facilitating indeed invention and in pushing the science,
it would relieve the memory and often spare us the trouble
eeking again that which has already been found. And these
ices would further be of use for a much stronger reason in
other sciences, where the art of reasoning has less power,
would be above all extremely necessary in Medicine. But
art of making such indices would be no slight one. Now
sidering these three dispositions, I find it remarkable that
y correspond to the ancient division, which you have renewed,
ich divides science or philosophy into theoretic, practical and
cursive, or rather into Physics, Ethics, and Logic. For the
thetic disposition corresponds to the theoretic, the analytical
he practical, and that of the index according to the terms to
ic: so that this ancient division does very well, provided we
lerstand these dispositions as I have just explained, *i.e.* not
distinct sciences, but as different arrangements of the same

truths as far as we judge it advisable to repeat them. Th is also a *civil division* of the sciences according to the facult and professions. We make use of it in the universities, and the arrangements of libraries;[1] and Draudius,[2] with his continu Lipenius,[3] who have left us the amplest, but not the best ca logue of books, instead of following the method of the Pande of Gesner,[4] which is wholly systematic, have contented the selves with the use of the great division of the materials (mu

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[1] For Leibnitz's sketch of a library classification and catalogue, *cf.* his *Id Leibnitiana Bibliothecæ Publicæ secundum classes scientiarum ordinan* Dutens, 5, 209–214. *Cf.* also his *Representation à S. A. S. le Duc de Wolf buttel, pour l'encourager à l'entretien de sa Bibliothèque, ibid.*, 5, 207–208; t same, in German, Guhrauer, *Leibnitz's Deutsche Schrift.*, 2, 470–472. — Tr.

[2] Georg Draud, 1573–1630 or 1635, a student at Marburg University a afterwards a proof-reader at Frankfort, Basle, and at the famous typograp at Feyerabend, and minister of the gospel at Gros-Carben, Ortenberg a Dauernheim, was the first to attempt an extended systematic bibliograph His *Bibliotheca classica sive catalogus officinalis, in quo singuli singulari facultatum ac professionum libri — secundum artes et ordine alphabet recensentur*, Frankfort, 1611, was the most complete bibliography of print books that had then appeared. A 2d ed., increased by all the books print from 1611–1625 of which the editor had knowledge, appeared in 1625. — Tr.

[3] Martin Lipenius, 1630–1692, a learned German bibliographer, who studi at Wittemberg, and was co-rector of the gymnasium at Halle, and of the aca emy at Lubeck, and rector and professor in the gymnasium at Stettin. published *Bibliotheca realis juridica*, 1679, the most valuable of his seri edited with additions by F. W. Struve, in 1720, by G. A. Jenichen, 1709–17 a jurist, philologian and historian, with corrections in 1736, and a suppleme in two parts, 1742; also several subsequent editions with corrections and add tions; *Bibliotheca realis medica*, 1679, *philosophica*, 1682, *theologica*, 16 They were called *realis* because the books were listed in the alphabetical ord of subjects and not under the names of their authors. — Tr.

[4] Conrad Gesner, 1516–1565, called the "German Pliny," because of h vast erudition, was Professor of Greek, 1537, at Lausanne, and of Physics a Natural History, 1541, at Zürich. He made "the first comprehensive attem at a general encyclopedia of literature, constructed in the form of a catalogue in his *Bibliotheca universalis*. The work contained the titles of all then know books, existent or lost, published or announced, in Hebrew, Greek and Lati giving under each important name a vast amount of bibliographical inform tion and criticism, original and selected, and often some specimens of the style. The first vol., Zürich, 1545, is arranged alphabetically according the authors' names; the second, entitled *Pandectæ sive partitionum unive salium, lib. XXI., — totius philosophiæ et omnium bonarum artium atque st diorum locos communes et ordines universales simul et particulares*, — Züric 1548, is arranged according to subjects and divided into 19 books, book 21, theological encyclopedia, not being published till 1549, and book 20, th medical writings, never appearing because in the author's view too imperfe for publication. It was reprinted and greatly enlarged by Simler in 1574, an by J. J. Fries, Zürich, 1583. — Tr.

same as the libraries) following the four faculties (as they
called) of theology, jurisprudence, medicine and philosophy,
l have afterwards arranged the titles of each faculty accord-
to the alphabetical order of the principal terms entering
o the inscription of the books: this lightened the task of
se authors, because they had no need to see the book or to
lerstand the matter which the book treats, but it does not
ficiently serve others, at least it does not make references in
titles to others of parallel signification; for not to speak of a
mber of mistakes they have made, we see that often one and
same thing is called by different names, as, for example,
ervationes juris, miscellanea, conjectanea, electa, semestria,
babilia, benedicta, and a multitude of similar inscriptions;
h books of the jurisconsults signify only the miscellanies of
Roman Law. This is why the systematic disposition of the
terials is without doubt the best, and we may join with it
habetical indices very full according to the terms and the
hors. The civil and received division, according to the four
ulties, is not to be despised. *Theology* treats of eternal
icity and all that relates thereto, so far as it depends on the
l and the conscience; it is like a jurisprudence which regards
at is said to exist *de foro interno* and employs invisible sub-
nces and intelligences: *Jurisprudence* has for its object gov-
ment and the laws, whose end is the happiness of men so
as the external and sensible can contribute thereto; but it
gards principally only that which depends upon the nature
the spirit, and does not enter much farther into the detail of
terial things whose nature it assumes in order to employ
m as means. Thus is it relieved at once of an important
int which concerns the health, strength and perfection of the
man body, the care of which is given to the faculty of *Medi-*
e. Some have believed with some reason that we might add
the others the *Economic Faculty*, which would contain the
thematical and Mechanical Arts, and all that concerns the
ail of the subsistence of men and of the conveniences of life,
which *Agriculture* and *Architecture* would be included. But
abandon to the faculty of *Philosophy* all which is not
luded in the three faculties which we call superior. We do
s quite badly, for we do it without giving means to those
o are of this fourth faculty for perfecting themselves by

practice as those can do who teach the other faculties. Th the mathematics perhaps excepted, we consider the faculty philosophy only as an introduction to the others.[1] This is wl we wish the youth to learn history, and the arts of speakii and some rudiments of theology and natural jurisprudenc independent of divine and human laws, under the title of met physics or psychology, ethics and politics with a little of physi also, in order to serve as young physicians. This, then, is tl civil division of the sciences following the bodies and profe sions of the scholars who teach them, without speaking of tl profession of those who work for the public otherwise than l their discourses and who ought to be directed by true scholar if the limits of knowledge were well understood. And even i the more noble manual arts, knowledge has been very muc bound up with performance, and might be more so. As in fa they are joined together in medicine, not only formerly amor the ancients (where physicians were also surgeons and apoth caries), but also to-day especially among the chemists. Th alliance also of practice and theory finds itself at variance bot among those who teach what are called exercises, as also amor the painters, or sculptors and musicians, and among some oth kinds of *virtuosi*. And if the principles of all these professior and arts, and even of the trades, were taught practically amon the philosophers, or in some other faculty of scholars as the might be, these scholars would be truly the teachers of th human race.[2] But it would be necessary to change much

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[1] *I.e.* in the broader sense of the term in which it is equivalent to tl Humanities, — *artes liberales*, — the liberal education, disciplinary, stimulati and cultural of the student's entire powers, which was considered until ve recently, and is regarded even now by many of the deepest and farthest-sight thinkers on education, as an essential precedent and preparation for all lat special professional study. The custom of regarding the Faculty of Ar or Philosophy as introductory to that of Theology, Medicine and Jurispr dence, goes back to the university curricula of the Middle Age, the Triviu and the Quadrivium, with their respective degrees of A.B. and A.M., which i their essential character and principles, with the necessary changes incide to an advancing civilization, have been, till within a short time at least, th controlling influence in shaping the curricula and methods of all modern co legiate and university education. — Tr.

[2] On this, as on every subject he touched, Leibnitz utters a suggestive an stimulating thought, which has in recent times brought forth much fruit i the establishment and maintenance of technical and art schools of every kin — Tr.

present state of things in literature and the education of the
uth, and consequently of the government. And when I con-
er how much men have advanced in knowledge in the last
ntury or two, and how easy it would be for them to go incom-
rably farther in order to render themselves happier, I do not
spair that a considerable improvement will come in a more
nquil period under some great prince whom God will be able
raise up for the good of the human race.[1]

Leibnitz constantly labored to secure the sympathy and active co-opera-
n of the "great princes" in the initiation and furtherance of learning, sci-
e, and the higher ideal interests of mankind in general, a conspicuous
mple of his success being that of the great reformatory genius of his time,
er the Great of Russia. Their correspondence is found in Foucher de
eil, *Œuvres de Leibniz*, 7, 395–598. *Cf.* also W. Guerrier, *Leibniz in seinen*
iehungen zu Russland und Peter dem Grossen, St. Petersburg and Leip-
z, 1873; Foucher de Careil, *Leibniz et Pierre le Grand*, Paris, 1873. For a
eral account of his various efforts in this direction, *cf.* Fischer, *Gesch. d.*
Philos., Vol. 2, Leibniz, 3d ed., 1889, pp. 211–249; and for a brief account,
rz, *Leibniz* (Blackwood's Philos. Class.), pp. 74–83. — TR.

APPENDIX

I

LEIBNITZ TO JACOB THOMASIUS[1]

April 20–30, 1669

[*From the Latin*]

How much that γεῦμα of philosophical history of yours has made mouths of all water cannot be told; for it is apparent how much ference there is between mere enumerations of names and those found views concerning the connections of opinions. And cer-nly all acquainted with the subject that I hear speak of your essay u know that I never flatter), unanimously affirm that from no man can a complete body of philosophical history preferably be ected. Very many skilled in antiquity rather than in art have en us lives rather than opinions. You will give the history not of losophers but of philosophy. They say in England that Joseph nvill's History of the growth of the sciences since Aristotle is in ss.[2] But I think he will pursue for the most part the mathemati-mechanical, and physical periods of this inquiry only, so I think

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Gerhardt, *Leibniz. philos. Schrift.* 1, 15–27; Erdmann, 48–54; Dutens, 4, I. 7–19; Kortholt, *Leibnit. epist. ad diversos*, Lipsiæ, 1734–42, 2, 121–142. tholt's text gives the piece as printed by Leibnitz in his edition of Nizo-, and differs considerably from that given by Gerhardt, which is the text wed in this translation. *Cf.* also, Gerhardt, *Leibniz. philos. Schrift.*, 4, 174. In this "impression," says Gerhardt, Einleitung, *ibid.*, p. 9, note **, e copy of the Royal Library at Hanover has been used, in which are found notes of Leibnitz." — Tr.

Joseph Glanvill, 1636–1680, Court Chaplain to Charles II., published his nce of the Royal Society of London, entitled *Plus Ultra, or the Progress Advancement of Knowledge since the days of Aristotle*, in 1668. In his of causation Glanvill was a predecessor of Hume. His *Scepsis scientifica, anity of Dogmatising*, London, 1665, edited by John Owen, 1885, and his *ncrementis scientiarum*, London, 1670, attacked the Aristotelian and Car-n dogmatism. Though a thorough-going sceptic in the direction of the lastic philosophy, he was opposed to the materialism of Hobbes. Some unt of Glanvill's views will be found in Lecky, *Rationalism in Europe*, 9 *sq.* D. Appleton & Co., New York, 1876. — Tr.

he has forestalled you in nothing. But I wish that you would produce a style and form for this more modern age and admonish ou inconsiderate youth that neither everything nor nothing is to be attributed to the restorers. Bagheminus[1] is not the only critic to whom yo are indebted; there are the Patricii, Telesii, Campanellæ, Bodini Nizolii, Fracastorii, Cardanii, Galilæi, Verulamii, Gassendi, Hobbii Cartesii, Bassones, Digbæi, Sennerti, Sperlingii, Derodones, Deusingii and many other names among whom the cloak of philosophy i divided.[2] To remind the world of these will be a diversion for you, a profit to the public.

Who does not assent to your estimate of Bagheminus? There is n skilful adjustment in hypotheses,[3] no logical sequence of reasons, bu in a word strange notions; certainly unless he has something t observe useful in special physics, he will better be silent. Bu Scaliger, Sennert, and Sperling, — for he acknowledged himself a pupi of this one also, — seem to me to be the parents of the opinion of tha one concerning God, the primary matter of things, who think tha forms are produced not from the passive power of matter, bu from the active power of the efficient one. Wherefore the conclusion is that they believe that God produces creatures rather from hi own active power, than from nothing by objective and as it wer passive power. God therefore in their opinion produces things out o himself, and so will be the primary matter of things. But as to thi you will more properly judge.

As to Descartes and Clauberg, I think in brief with you that th disciple is clearer than the master. Nevertheless, I should ventur again to affirm that hardly any one of the Cartesians have added any thing to the discoveries of the master. Certainly Clauberg, Ræus pinoza,[1] Clerselier,[2] Heerbord,[3] Tobias Andreæ,[4] Henry Regius,[5] have ublished nothing but paraphrases of their master. But I call those artesians only who follow the principles of Descartes, from which umber those great men Bacon, Gassendi, Hobbes, Digby, Cornelius f Hogheland,[6] etc., whom the common people confound with the

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[1] *Cf.* the letter of Jacob Thomasius to Leibnitz, October 2, 1668, Gerhardt *Leibniz. philos. Schrift.*, 1, 14; Kortholt, *Leibnit. Epistolæ ad diversos,* 35: "Bagheminus ille, cujus negotium geritur, Scabinus est Stetinensis, et nostra tum theologica, tum philosophica facultate petiit philosophiæ suæ nova censuram. Theologi responderunt. A nobis nihil aliud repositum illi es quam disputatio mea, quæ si in manus hominis pervenit, facile judicabit, qu in hanc novitatem animo simus." — Tr.

[2] For some account of the lives and philosophy of the persons whose name are here mentioned, *cf.* Lasswitz, *Gesch. d. Atomistik;* Stöckl, *Gesch. Philos. d. Mittelalters*, III. [Vol. 4]. — Anton Deusing, 1612–1666 (not referre to in the works cited), was a German physician and Professor of Medicine a Groningen. He had an extended knowledge of philosophy, mathematics, an oriental languages, and published many works, among them, *De vero syst mate mundi, dissertatio mathematica, qua Copernici systema mundi reform tur*, etc., Amsterdam, Elzevir, 1643, 4to. — Tr.

[3] Erdmann reads: "hypothesibus ejus," *i.e.* his hypotheses. — Tr.

[4] Jean de Raey, date of birth unknown, died 1702, was Professor of Philos phy in the University of Leyden 1652–1668, and entered upon his Professorshi at Amsterdam in January, 1669, with an *Oratio de sapientia veterum.* In h

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lavis philosophiæ naturalis seu introductio ad naturæ contemplationem ristotelico-Cartesianam, 1654, 2d ed., 1677, he sought to improve and comlete the doctrine of Aristotle through that of Descartes. He explained *rkenntnisslehre* wholly after the manner of Aristotle; but contested his ssumption of the eternity of the world or the divine nature of the stars. He iscussed mainly the nature of matter and the origin of motion, wholly on a artesian basis. — Tr.

[1] In the impression of this letter given by Gerhardt, *Leibniz. philos. chrift.*, 4, 162 *sq.*, Leibnitz has erased the names of Spinoza and Cornelius an Hooghelande, and added after Bacon that of Galileo. This impression mits also the names of Ræus and Clerselier. For the other textual changes, . the impression itself. — Tr.

[2] Claude Clerselier, 1614–1684, the father-in-law of Rohault (*cf. ante*, p. 233, . 2), was a zealous disciple of Descartes and edited some of his works: *Le onde, ou traité de la lumière*, Paris, 1677; *Traité de l'homme*, Paris, 1664; *es lettres de René Descartes*, 3 vols., Paris, 1657–1667. — Tr.

[3] Adrian Heereboord, 1614–1659, Professor of Philosophy in the University f Leyden, was one of the first and most zealous advocates of the new tenency of thought introduced by the philosophy of Descartes. He united to a ertain extent Cartesianism with the traditional authority of Aristotle, evience of which appears in his *Parallelismus Aristotelicæ et Cartesianæ phisophiæ naturalis*, 1643. Other writings of Heereboord are: *Meletemata hilosophica*, 1654; *Philosophia rationalis, moralis, et naturalis*, 1654, 2d ed., 60; *Philosophia pneumatica*, 1659. — Tr.

[4] Tobias Andreæ, 1604–1674, Professor of History and Greek Language at roningen, successfully cultivated philosophy and became known as a zealous rtisan of the philosophy of Descartes. He wrote, in 1653, against Jacob evius, *Assertio methodi Cartesianæ*, and was also author of *Brevis explitio, brevi explicatione mentis humanæ Henr. Regii reposita.* — Tr.

[5] Hendrik van Roy, 1598–1679, usually called Regius, was a Dutch physician, ho in 1638 became Professor of Botany and Theoretical Medicine at Utrecht. e was a zealous disciple and advocate of the ideas of Descartes, until the oët-Schoock-Descartes controversy and Descartes' rejection of him as a true presentative of his views resulted in their falling out. Regius regarded the ul as a mode of the bodily substance, and in physics, while resting throught on Cartesian principles, differed from Descartes in his conception of otion and rest. On this doctrine of Regius, significant for the problem of dy, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 405–408. Regius published, among her works, *Fundamenta physicæ*, Leyden, 1646; *Philosophia naturalis*, msterdam, 1661. Dr. James Martineau, *A Study of Spinoza*, London, acmillan & Co., 1882, page 75, line 7, and foot-note 1, in translating "Regis" stead of "Regius" has misunderstood Leibnitz's reference and wrongly tributed to him a "*lapsus memoriæ*." — Tr.

[6] Cornelius Van Hooghelande, a Catholic nobleman who lived at Leyden, as a friend and disciple of Descartes. In his *Cogitationes*, 1646, Hooghelande so developed the fundamental doctrines of Descartes that the only Cartesian-

Cartesians, must in a word be left out, since however they were eith the equals or even the superiors of Descartes in age and natur capacities; I acknowledge that I am anything but a Cartesia That rule I hold common to all these renovators of philosophy, th nothing is to be explained in bodies except by magnitude, figure, an motion. In respect to Descartes I hold the argument only of h method, for when we come to the present matter, he relaxed utterl from that severity, and descended abruptly to certain extraordinar hypotheses, a course which in his case Vossius rightly indeed repr hended in his book on Light.

Wherefore I do not hesitate to say that I approve more thing in the books of Aristotle περὶ φυσικῆς ἀκροάσεως, than in the Med tations of Descartes; so far am I from being a Cartesian. Nay more, would venture to add that all those eight books can be received wit out violation of the reformed philosophy. By which very metho those difficulties will *ipso facto* be met which you, most distinguishe man, are investigating in regard to the irreconcilable Aristotl For the conclusions of Aristotle concerning matter, form, privatio nature, place, infinity, time, motion, are for the most part certain an demonstrated, this one thing generally excepted, what he asserte about the impossibility of a vacuum and motion in a vacuum. Fo to me neither vacuum nor plenum is necessary, and the natur of things seems capable of explanation by either method. In behal of the vacuum contend Gilbert, Gassendi, Gericke; for the plenum Descartes, Digby, Thomas Anglus,[1] Clerk[2] in his book "De plenitu dine mundi." For the possibility of each, Thomas Hobbes and Rober Boyle. And I confess that, with difficulty indeed, yet without vacuum, the rarefactions of things can be explained. I saw recentl the book of John Baptist du Hamel,[3] a French scholar, on th

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ism of his work was the dedication." Descartes regarded him, says Kun Fischer, *Descartes and his School*, translated by Gordy, p. 503, "as a well disposed man without a calling to philosophy, and without understanding hi doctrine." Cousin, *Œuvres de Descartes*, 6, 279–281, gives a letter, with foot-note of an unknown editor stating his belief that Descartes wrote thi letter to Van Hooghelande in March, 1636, at Amsterdam. — Tr.

[1] Thomas White, 1582–1676, called Anglus, Albius, Candidus, etc., publishe his *Institutionum Peripateticarum ad mentem summi clarissimique Philoso phi Kenelmi Equitis Digbæi* at Lyons, 1646. Leibnitz refers to him briefl in the *Theoria motus concreti*, § 55 (Gerhardt, *Leibniz. philos. Schrift.*, 4 207; *Math. Schrift.*, II., 2 [Vol. 6], 47), and in the *Theoria motus abstract* (*ibid.*, 4, 228; II., 2 [Vol. 6], 67), as "subtilissimus" and "acutissimus." — Tr

[2] Gilbert Clerke, 1626–1697 ?, a mathematician and theological writer, in hi first work, *De Plenitudine Mundi*, etc., 1660, reviewed Descartes and attacke Bacon and Hobbes, and published in 1662 his *Tractatus de Restitutione Corporum*, results of studies following Torricelli and Boyle. — Tr.

[3] Jean Baptiste du Hamel, 1624–1706, was a French experimental philosopher and astronomer, who lectured on physics and experimented so far as hi

mony of ancient and modern philosophy, published not long
ce at Paris, in which he elegantly expounds and often acutely
imates the hypotheses of some of the most celebrated ancients
l moderns. He also has not a few words concerning the con-
ting views about the vacuum. As to the rest, scarcely any sane
n will call in question all the remaining things discussed by
istotle in Bk. VIII. Phys. and the entire Metaphysics, Logic,
l Ethics. Who does not admit the substantial form also; namely,
t by which the substance of one body differs from the substance
nother body? Nothing is truer than primary matter. This one
ng is in question, whether the abstract discussions of Aristotle con-
ning matter, form, and change, are to be explained by magnitude,
ure, and motion. The Scholastics deny, the Reformers affirm, it.
e opinion of the Reformers seems to me not only the truer, but the
re in harmony with that of Aristotle; I will speak briefly of each.
nd first of Aristotle. For that the Scholastics strangely pre-
ted his meaning, to whom is it better known than to you,
st distinguished man, who have been the first to bring forth
the light a good many of this class of errors? Since with
in metaphysics Soner[1] and Dreier,[2] in logic Viottus, Zabarella,[3]

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tion and the instruments then existing allowed. He published, among
er works, *Astronomia physica*, and *De meteoribus et fossilibus*, Paris,
; *De consensu veteris et novæ philosophiæ*, Paris, 1663 and later editions,
work here referred to by Leibnitz; *De corporum affectionibus*, 1670; his
ra, Norimberga, 1681. *Cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 493, 494. — Tr.

Ernst Soner, 1572–1612, was Professor of Philosophy and Medicine at
lorf, and in philosophy an Aristotelian. He was the author of many
utationes, the greater part of which appeared in Felwinger's *Philosophia*
lorfiana, Norimberga, 1644; also of Commentaries on Aristotle's Meta-
sics and Physics, 1607; he also wrote against eternal punishment in his
onstrationes quid æterna impiorum supplicia non arguant Dei justitiam
injustitiam, and some medical works. *Cf.* Magn. Dan. Omeisius, *Gloria*
demiæ Altdorfianæ, etc., Altdorf, 1683. Leibnitz in his *Preliminary*
sertation to his edition of Nizolius (Gerhardt, 4, 155; Erdmann, 68 a;
ens, 4, Pt. I., 57) speaks of his contribution, together with that of Dreier,
e understanding of Aristotle's Metaphysics; and in the *Théodicée*, Pt. III.,
, of his argument against eternal punishment. — Tr.

Christian, or Peter, Dreier, 1610–1688, was Professor of Theology at Kön-
erg, and published his *Sapientia seu Philosophia prima, ex Aristotele*
que optimis commentatoribus, conscripta, Königsberg, 1644, 4to. Leibnitz
s to him in his *Preliminary Dissertation* to Nizolius (Gerhardt, 4, 155;
nann, 68 a; Dutens, 4, Pt. I. 57) and also in the *Théodicée*, Pt. II., § 184:
Dreier de Königsberg a bien remarqué que la vraie métaphysique
ristote cherchait, et qu'il appelait τὴν ζητουμένην, son *desideratum*, était
éologie." — Tr.

acopo Zabarella, 1533–1589, was a teacher of Logic at Padua. His *De rebus*
ralibus, lib. XXX., appeared at Col., 1590, fol.; his *Opera logica*, Col.,
fol.; both also in several later editions. An account of Zabarella will be
d in Stöckl, *Gesch. d. Philos. d. Mittelalters*, III. [Vol. 4], 263–272. — Tr.

Jung,[1] in civics Jason Denores,[2] Piccart,[3] Conring, Felden,[4] Durrius,[5] and many others, acknowledge this, why, I pray, shall we not suspect the same or worse in physics, aids in the knowledge of which must be sought from sense and experiment, of which means the Scholastics confined for the most part in closed monasteries were absolutely deprived? It is probable enough, therefore, that in physics they were deceived; how if I shall show more than this, that it is altogether certain? In which thing I may be engaged again in a twofold way. For either it is shown that the Reformed Philosophy can be reconciled with the Aristotelian and is not contrary to it, or further, it is shown that the one not only can, but also must, be explained by the other; nay, rather, that the very things which are discussed with so much pomp by the moderns flow from the Aristotelian principles. By the former way the possibility, by the latter the necessity, of the reconciliation is accomplished, although in this very instance i a possible reconciliation is shown, the thing is accomplished. Fo hough each explanation, both of the Scholastics and of the oderns, were possible, nevertheless from two possible hypotheses ust always be chosen the clearer and more intelligible, such as isputably is the hypothesis of the moderns, which makes for itself incorporeal entities in the midst of bodies, but besides magnitude, ure, and motion assumes nothing. What possibility there is reconciliation I cannot better show than by asking that some nciple of Aristotle be given me which cannot be explained by gnitude, figure, and motion.

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[1] Joachim Jung, 1587–1657, an eminent mathematician and physicist, and an earnest advocate of the corpuscular theory, published *Logica Hamburgensis*, Hamburg, 1638, 8vo; *et recensente Joh. Vegetio*, 1681, 8vo; and various disputations. Leibnitz refers to his *Geometria empirica*, Hamburg, 1681, 8vo in the *Théodicée*, Pt. II., § 214. For an account of him and his corpuscular theory, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 245–261; E. Wohlwill, *J. Jungiu und die Erneurung atomistischer Lehren im 17 Jahrhundert*, Hamburg, 1887 G. E. Guhrauer, *J. Jung und sein Zeitalter*, Stuttgart u. Tübingen, 1859. — Tr

[2] Jason Denores, died 1590, was well acquainted with the peripatetic philosophy, and published *Dell' ottima republica*, Venice, 1578, 4to; and *De constitutione philos. Aristotelis*, Patavii, 1584, 4to. — Tr.

[3] Michael Piccart, 1574–1620, Professor of Philosophy and Poetry at Altdorf was one of the most learned men of his times, and especially distinguished a an interpreter of Aristotle. Among his works were *Isagoge in lectione Aristotelis*, Nuremberg, 1605, 8vo, reprinted with the notes of J. C. Durrius Altdorf, 1660, 1666, 8vo; *Organum Aristotelicum in quæst. et respons. redactum*, Leipzig, 1613, 8vo; *In politicos libros Aristotelis*, Leipzig, 1615, 8vo, Jena 1659, 8vo, a highly esteemed work, which was reprinted with the title: *Arg menta librorum politicorum Aristotelis, cum præfatione de nævis istius oper Aristotelici*, Helmstadt, 1715, 4to. *Cf.* Morhof, *Polyhistoria*, 2, 63. — Tr.

[4] Johannes Felden, a jurisconsult, lived during the seventeenth centur Leibnitz refers to him in his *Prelim. Dissert.* to Nizolius (Gerhardt, 4, 155 156; Erdmann, 67 b, 68 a; Dutens, 4, Pt. I., 57, 58), as the author of *eruditi simæ . . . meditationes* on the *Topics* and *Analytics* of Aristotle, "not y published," of notes on Grotius, of *Elementa Juris universalis*, and *Analys Politicorum Aristotelis*. *Cf.*, also, Morhof, *Polyhistoria*, 2, 559. — Tr.

[5] Johann Conrad Durrius, 1625–1677, was Professor of Theology and Mora Philosophy at Altdorf. Among his writings were *Compendium theologi moralis*, in several editions, one of the best being that of 1698, 4to; *Orat adversus Spinozam*, Jena, 1672; *Notæ in Isagogen Piccarti*, perhaps the wor Leibnitz here had in mind in referring to Durrius. Morhof, *Polyhistoria*, 63, gives some account of an edition of Piccart's *Isagoge in lectionem Arist telis*, by Durrius, which appeared at Altdorf, 1665, 8vo. — Tr.

Primary matter is the mass itself, in which there is nothing else an extension and ἀντιτυπία or impenetrability; it has extension m the space which it fills; the nature itself of matter consists this, that it is something crass and impenetrable, and consequently vable when another meets it (while the second must yield). Now s continuous mass filling the world, while all its parts are at rest, is mary matter, from which all things are produced through motion, d into which they are resolved through rest. For there is in no diversity, mere homogeneity, except through motion. Hence eady all the difficulties of the Scholastics are solved. First, they uire concerning its entitative character previous to all form. And reply must be that it is an entity previous to all form, since it has own existence. For all that exists, which is in any space, a fact ich cannot be denied of that entire mass although without motion d discontinuity. But the essence of matter or the form itself of poreity consists in ἀντιτυπία or impenetrability; matter also has ntity, but interminate, as the Averroists say, or indefinite; for ile it is continuous, it is not cut into parts, and therefore no mini are actually given in it: yet extension or quantity is given. things not concerning the extrinsic termini of the world, or entire mass, but concerning the intrinsic termini of the parts, monize in a wonderful manner.

rom matter let us pass to form through the dispositions. Here ain, if we assume form to be nothing else than figure, all things nderfully accord. For since figure is the terminus of body, to roduce figures into matter there will be need of a terminus. I order, therefore, that various termini may arise in matter, there need of a discontinuity of parts. For while for this very reason parts are discontinuous, any one you please has separate termini (r Aristotle defines continua ὧν τὰ ἔσχατα ἕν); but discontinuity can induced in that mass before continuous in two ways; in one way that at the same time contiguity is destroyed, which happens en they are so violently separated from one another that a uum is left, or so that contiguity remains, which happens when se which are immediate to themselves remain, yet are moved in erent directions; for example, two spheres, one of which includes the other, can be moved in different directions, and yet remain contiguous, although they cease to be continuous. From these considerations it is evident that, if indeed from the beginning a mass discontinuous or broken up by vacuities was created, some forms of matter are at once concrete; but if, indeed, it is continuous from the beginning, forms must of necessity arise through motion (for concerning the annihilation of certain parts in order to obtain vacuities in matter, because it is beyond nature I do not speak, because from motion division, from division termini of parts, from termin of parts their figures, from figure forms, therefore from motion forms arise). From which it is evident that all disposition to form is motion, evident also the solution of the vexed question concerning the origin of forms. Which question the distinguished man Herm. Conring could satisfactorily answer by his special dissertation only by asserting that forms arise from nothing.[1] We shal say they arise from the power of matter, not by producing anything new, but only by destroying the old, and causing termini by division of the parts, as he who makes a column does nothing els than[2] remove the useless parts, the residuum after the other part are removed by this very means receiving that figure which we cal a column; that is to say, all the figures or forms which are contained in the mass itself need only determination and actual separation from the others adhering to them. If this explication is admitted whatever arguments are produced against the origin of forms from the power of matter are mere trifles.

It now remains for us to come to changes. Changes are enumerated commonly and rightly: generation, corruption, increase diminution, alteration, and local change or motion. The modern think all these can be explained through local motion alone. An first, From increase and diminution the thing is manifest; for change of quantity in the whole takes place when a part change its place, and either approaches or departs. It remains for us t explain generation and corruption and alteration through motion and I note beforehand that the same numerical change is a generation and alteration of different things, for example, since it evident that putrefaction consists in those worms imperceptible t

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[1] Gerhardt reads: "Conringius peculiari dissertatione non aliter satisface potuit, quam formas ex nihilo oriri." Erdmann reads: "Conringius peculia dissertatione non aliter occurrit, quam concedendo formas ex nihilo oriri, se meditationes istae compendiosiorem viam monstrant, ut illuc confugere neces non sit. Discimus enim formas oriri," etc.; *i.e.*, Conring met in his speci dissertation not otherwise than by admitting that forms spring from nothin but these very meditations show a more advantageous way, so that it is n necessary to flee thither. For we say that forms arise, etc.

[2] Erdmann and Dutens read: "quam quod inutilia tollit," *i.e.*, than th which removes the useless parts. — Tr.

e naked eye, any putrid infection will be an alteration of the
an, a generation of the worm. In a similar way Hooke[1] shows
his "Micrographia," that rust in iron is a minute little forest
ylvulam) which has sprung up; to rust therefore will be an alter-
ion of the iron, a generation of little shrubs. But both genera-
on and corruption, as well as alteration, can be explained by a
inute motion of parts; for example, since white is that which
lects the most light, black that which reflects little, those things
ll be white whose surface contains the largest number of little
cula; this is the reason why foaming water is white, because it
nsists of innumerable little bubbles; moreover as many bubbles,
many *specula*, since before well-nigh the entire water was nothing
t one *speculum*, as in a broken glass mirror (*speculum*), so many
rts become so many mirrors (*specula*): which, indeed, is the reason
y ground glass is whiter than that which is whole. In a simi-
manner, therefore, when water is broken by bubbles into separate
cula, whiteness arises, which is the reason also why snow is
iter than ice, and ice than water. For it is false that snow is
ndensed water, since it is rarefied rather, whence also it is lighter
an water and occupies more space. By which reasoning the
phism of Anaxagoras concerning black snow is explained (*diluitur*).
om these considerations it is evident that colors arise from change
ne of figure and position in the surface; the same explanation as
gards light, heat, and all qualities, if occasion should allow, could
sily be given. But now, if qualities are changed through motion
ne, by the same process also substance will be changed: for if
, nay even if some, of the necessary qualities are changed, the
ng itself is destroyed; for example, if you destroy either the
ht or heat, you will destroy the fire. And if the motion is set
operation (*inhibito*), you will produce each. And this is the
son why a closed fire dies for want of the nourishing air, so
at I may pass over in silence the fact that the essence differs

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Robert Hooke, 1635–1703, Professor of Geometry in Gresham College, Ox-
d, and Secretary of the Royal Society, published his *Micrographia, or*
e Physiological Descriptions of Minute Bodies in 1665. This book "con-
ned the earliest investigation of the 'fantastical colours of' thin plates,
h a quasi-explanation by interference, the first notice of the 'black spot'
soap-bubbles, and a theory of light, as 'a very short vibrative motion'
nsverse to straight lines of propagation through a 'homogeneous medium.'
at was defined as 'a property of a body arising from the motion or agita-
of its parts.'" From his paper (May, 1666) on curvilinear motion, illus-
ted with the aid of the "circular pendulum," showing experimentally that
centre of gravity of the earth and moon is the point describing an ellipse
und the sun, dates "the clear statement of the planetary movements as a
blem in mechanics." For an account of his Vibration-theory, *cf.* Lasswitz,
ch. d. Atomistik, 2, 329–338. An abridgment of his *Micrographia* appeared
ondon, 1780. — Tr.

from its own qualities only in relation to the sense. For as th
same city presents another aspect of itself, if you look down fron
a tower in the midst of the city (*in Grund gelegt*), which is jus
the same as if you beheld its essence; it appears otherwise i
you approach from without, which is just the same as if you perceive the qualities of the body; and as the external aspect of th
city varies, according as you depart from the eastern or the western side, so in a similar way the qualities vary in proportion to th
variety of the organs. From these considerations now it is easil
manifest that all changes can be explained through motion. It is n
objection that generation takes place in an instant, that motion i
successive, for generation is not motion but the end of motion
therefore the end of motion is in an instant, for some figure i
produced or generated by the very last instant of motion, as th
circle is produced by the very last moment of the circumgyration
From these considerations it is evident why the substantial forn
consists in the indivisible, and does not receive more or less. Fo
figure also does not receive more or less. For although one circl
may be greater than another, yet the one circle is not more a circl
than the other, for the essence of the circle consists in the equalit
of the lines drawn from the centre to the circumference; no
equality consists in the indivisible and does not receive more c
less. Nor, indeed, must the figure or the magnitude of the objec
be accidents, nor in fact are they always accidents; for althoug
for example, flowing is an accident of lead, for it flows not unle
in the fire, it is nevertheless of the essence of mercury. No
the cause of flowing is without doubt the free curvilineity c
the parts, whether it consists of globes or cylinders or ovals c
other spheroids: the curvilineity therefore of the subtile parts
an accident of the lead, but essential to the mercury. The reaso
is, because all metals arise from fixed mercury by means of th
salts, and the nature of the salts consists in rectilinear figures fitte
for rest; hence, if we allow salts dissolved in water to crystalli
freely, some forms known to the chemists as tetraedric, others a
hexaedric, octaedric, etc., but none round or curvilinear, appea
Hence salts are the cause of fixity; therefore those acid salts mixe
with the mercury in the bowels of the earth, as it were, throug
the smallest parts impede the freedom of the curvilinear par
by their interposition and constitute the metal. But in the fi
the metal returns to the nature of mercury, for the fire interposir
itself in the subtile parts, frees the curvilinear hydrargyrate par
from the plane-sided salts; hence the flowing in the fire. Th
it is evident that there is scarcely anything in the Aristoteli
physics which cannot be properly explained and illustrated by th
reformed.

These examples, indeed, have occurred to me spontaneously (*de* *o*), while writing; very many more are collected by others through natural philosophy. Nor do I fear that in what I have hitherto id, you will think that I have followed too much the descriptions Ræus or his authority. I was acquainted with such things me time before I even heard of Ræus. I read Ræus, to be sure, t in such a way that I now scarcely remember what subjects discussed. Nor, indeed, was Ræus the first and only one of those omoting a union between Aristotle and the moderns. Scaliger ems to me to have been the first to pave the way; in our times nelm Digby and his follower, Thomas Anglus, the latter in his ok on the immortality of the soul, the former in his "Peripatetic stitutions," treated *ex professo* the same subject long before Ræus. r do both Abdias Trew[1] and especially Erhard Weigel differ m them. Hitherto we have shown the possibility only of reconiation; it remains for us to show the necessity also. Of what e, namely, does Aristotle in the eight books of the "Phys. Auditus" at than figure, magnitude, motion, place, time? If therefore the ture of body in general is completed (*absolvitur*) by these, the ture of body in particular will be completed by a given figure, given magnitude, etc. And, indeed, he himself says, Book 3, apter (*text.*) 24, Phys., that all natural science is concerned with gnitude (with which figure is connected), motion, and time. istotle often says the same, that movable being is the subject of ysics, that natural science treats of matter and motion; he himself o makes heaven the cause of all things which take place in the olunary worlds. Now heaven, he says, does not act upon the dies below it except through motion. But motion does not duce anything but motion or termini of motion, namely magnile and figure, and from these the resulting position, distance, mber, etc. From these, therefore, everything in nature must be plained. The same Aristotle likewise often says (as Book I. the "Phys. Aud.," chap. 69) that the relation of the brass to the ure of the statue is the same as that of the matter to the form. t I might prove that the figure is the substance, or rather that the space is the substance, that the figure is something substantial, because all science is concerned with substance; further it cannot be denied that geometry is a science. You replied that you could produce the place in which Aristotle had denied that geometry was a science sooner than I would produce that in which he affirmed it. I do not indeed doubt, illustrious sir, that there are some places of Aristotle which can be drawn or twisted to this purpose, but yet I think that these are overthrown by a very large number of his other expressions. For what is more frequent in all the books of the "Analytics" than examples of geometers, so that he seems to have wished geometrical demonstrations to be, as it were, the measure of the rest. Now the more ignoble is absurdly constituted the measure of the more noble. And so meanly, indeed, did the Scholastics think of mathematics at first, that they made every effort to exclude mathematics from the number of the perfect sciences, principally by means of this argument, because it does not always demonstrate from causes. But if we consider the matter more accurately, it will appear that it does demonstrate from causes. For it demonstrates figures from motion: from the motion of the point is produced the line, from the motion of the line the surface, from the motion of the surface the body. From the motion of the right line upon right lines arises the rectangle. From the motion of a right line about an immovable point arises the circle, etc. The constructions of figures, therefore, are motions; now from constructions relations (*affectiones*) concerning the figures are demonstrated. Therefore from motion, and consequently *a priori*, and from cause. Geometry, therefore, is a true science. Therefore with Aristotle's consent its subject, namely space, will be a substance. Nor is it so very absurd that geometry treats of the substantial form of bodies. For behold the passage of Aristotle, 13 "Met." chap. 3, in which he expressly says that geometry abstracts from matter, from the final and the efficient cause; in accordance with which supposition it follows that he treats either of the substantial or accidental form. But he does not treat of the accidental, because the accidental form in its own real definition involves the subject or matter in which it is, although Aristotle nevertheless says that geometry abstracts from matter. Therefore geometry treats of the substantial form. Hence there immediately arises in my mind as I write these things a certain beautiful harmony of the sciences, the matter, of course, having been accurately considered: theology or metaphysics treats of the efficient cause of things, namely mind; moral philosophy (whether practical or civil, for, as I learned from you, it is one and the same science) treats of the final cause of things, namely the good; mathematics (I mean the pure, for the rest is a part of physics) treats of the form or idea of things, namely figure; physics treats of the matter of things, and of the

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[1] Abdias Trew, 1597–1669, was Professor of Physics and Astronomy in the iversity of Altdorf, where he erected, 1657, the first observatory seen in t part of the world. He made discoveries in the theory of music, especilly as regards the most accurate temperament, which he set forth in his *itor lycæi musici*, Rothenburg, o. T., 1635. His chief work was in astronoy and meteorology, and he carefully observed all the comets appearing ing his lifetime. As a chronologer he contributed to the adoption of the egorian calendar by the Protestant states. He published, among other rks, *Directorium mathematicum*, Nuremberg, 1657; *Lehrbuch d. sphärien Astronomie*, Nuremberg, 1637; *Gründliche Calendarkunst*, Lüneberg, 6.—Tr.

gle affection resulting from its combination with other causes,
ely motion. For the mind in order to obtain for itself a good
pleasing figure and position of things, supplies motion to matter.
matter by itself is devoid of motion. For the origin of all
ion is mind, as Aristotle also rightly saw.

or to come to this point, Aristotle seems nowhere to have pictured
himself any such substantial forms, which are in themselves
cause of motion in bodies, as the Scholastics conceive; he
eed defines nature as the origin of motion and rest, and form
matter he calls nature, but form in a higher degree than matter,
from this what the Scholastics mean (*volunt*) does not follow,
t form is a certain immaterial entity, irrational nevertheless in
ies, which itself spontaneously without the impact of an external
ng gives motion downwards to a body, for example, to a stone.
the form, indeed, is a cause and source of motion, but not at
. For a body is not moved, except from the outside, as Aristotle
tly not only says, but also demonstrates; for example, a globe
be in a plane, if it is once at rest it will not move of itself
ver, unless in consequence of an added external impulsor, for
mple, another body. If this now approaches, the second body is
source of the impressed motion, but the figure, namely globosity,
he source of the motion taken up, for if globosity were absent,
ing been produced by chance according to circumstances, the
y would not yield to the second body so easily. From this it
vident that the scholastic concept does not follow from the defi-
on of the Aristotelian form. Form, therefore, is the source of
ion in its own body, and body itself is the source of motion in
ther body, I confess; but the primary source of motion is the
nary and in reality from matter abstracted form (which at the
e time is efficient), namely mind. Hence liberty and spontaneity
ur in minds alone. Therefore it is not absurd that of the substan-
forms mind only is called the primary source of motion, the
ers having their motion from mind. And by this argument he[1]
nds to the first mover. To this objection you give a twofold
y; first, this argument can avail nothing with Epicurus, who
ows upon his atoms *per se* downward motion. I admit that this
ument can avail nothing with him, unless it be previously demon-
ted to him that this itself is absurd and impossible, namely, that
dy has motion from its own self, a thing which Cicero also if
n not mistaken already at that time did in his books "De natura
rum," gracefully laughing at Epicurus because he introduced
his way something without cause and reason in his hypotheses.
in the nature of things nothing is down save as regards us,

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[1] Aristotle. — *Gerhardt's Note.* — Tr.

and so there is no reason why any body should move in th rather than in that direction (*plagam*). Therefore we shall easil answer Epicurus, denying that whatever is moved is moved b another outside itself, and shall vindicate the laboring certainty the existence of God. Second, you object that Aristotle seems t have reasoned not so much from this axiom that the source of a motion is outside the moved body, as from the other that progres into infinity is not granted. But in truth, most noble sir, conside carefully whether or not either connection of ideas is neede For unless it is admitted that what is moved extraneously is move plainly we shall arrive at no progress, still less at infinity; for th opponent will resist steadfastly from the beginning and any give body will reply that it is itself sufficient to produce its own motio through its own substantial form, and needs therefore no move much less the first. Therefore that ladder will tumble down a soon as the first step, and as it were the foundation, is taken awa Then also Epicurus was wont to admit progress into infinity; ther fore we must consider not so much what Epicurus admits or doe not admit, as what can certainly be demonstrated. The Aristotelia philosophy, the inevitable result of the reformed philosophy itsel must be briefly touched upon.[1] It is plain that what must be di cussed by the theologians must be discussed by the philosophe also. The holy fathers illustrated the Holy Scripture by the bes interpretations: soon the monks obscured them by superstition The light of souls having arisen, the reformed theology is thre fold: the one heretical, which rejects the scriptures themselves, a of the fanatics; the second schismatical, which harmonizes the a cient fathers, the doctors of the church, with the sacred scriptu and the primitive church, as of the Evangelicals.[2] In like manne the Greek interpreters[3] illustrated Aristotle, the Scholastics obscure

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[1] The Latin text reads: "Aristotelicam philosophiam reformatæ ipsi philosophiæ inevitabilis eventus breviter attingenda est." Gerhardt's no reads: "In diesem Satze fehlt etwas," *i.e.* In this sentence something is wan ing. Erdmann gives the following: "*Observ. Thomasii.* Sic scriptum erat librario, sed hiat alias haec periodus: nec lectionem ejus constituo," *i.e.* Not of Thomasius. Thus it was written by the copyist, but this sentence is othe wise lacking: I do not determine its reading. — Tr.

[2] Gerhardt's note reads: "Auch hier scheint etwas zu fehlen," *i.e.* He also something appears to be wanting. Erdmann gives the following: "*Obser Thomasii.* Etiam hic aliquid deest; datur enim pro triplici theologia tantu duplex. Scripsisse puto: alia schismatica, alia vera, quæ priscos Patres, et Confer sequentem," *i.e.* Note of Thomasius. Here also something is wanting for, instead of the threefold theology, only a twofold is given. I think he wrote the second schismatic, the third true, which the ancient Fathers, etc. *Cf.* th following. — Tr.

[3] Gerhardt reads, "interpretes"; Erdmann, "Patres." — Tr.

with trifles. The light having arisen, the reformed philosophy
reefold: the first stupid, like that of Paracelsus,[1] Helmont,[2] and
e others who utterly reject Aristotle; the second bold, which
small regard for the ancients, nay with open contempt for
, render(s)[3] (their) its own meditations even when good sus-
d, such as that of Descartes; the third true, by whom Aristotle
cognized as a great man and in most things right.

e reformed philosophy having just been reconciled with Aris-
, it now remains to show its truth *per se*, precisely as the Chris-
religion can be proved both from reason and history and from
sacred Scripture. But it must be proved that no entities are
in the world besides mind, space, matter, motion. Mind I call
king being. Space is a primarily extended entity or mathemati-
ody, which manifestly contains nothing else than three dimen-
, and is also that universal place of all things. Matter is a
ndarily extended entity, or that which besides extension or math-
ical body has also physical body, that is, resistance, ἀντιτυπίαν,
ity, the power of filling (*repletivitatem*) space, impenetrability,
h consists in this, that it is compelled by the approach of another
being to move or to stop the other; from which nature of im-
trability therefore motion flows. Matter therefore is an entity
h is in space or an entity coextensive with space. Motion is a
ge of space. But figure, magnitude, position, number, etc., are
entities really distinct from space, matter, and motion, but only
litions (*habitudines*) amid space, matter, motion, and their parts
e by the supervenient mind. I define figure further as the ter-
us of extension, magnitude as the number of parts in the exten-
. I define number as one, and one, and one, etc., or unities.
tion is reduced to figure, for it is a formation (*configuratio*) of
y (figures). Time is nothing else than magnitude of motion.
since every magnitude is a number of parts, what wonder
totle defined time as the number of motion? But thus far ter-
i only have been explained, and the sense in which we use them
orth, but nothing as yet proved. Now let us show that there is
eed of any other things in order to explain the phenomena of the

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Theophrastus Paracelsus, 1473–1541. On his philosophy, *cf.* Stöckl, *Gesch.*
hilos. d. Mittelalters, III. [Vol. 4], 430–452; Lasswitz, *Gesch. d. Atomistik*,
8–306. — Tr.

Joh. Bapt. Van Helmont, 1577–1644. On his philosophy, *cf.* Stöckl, *Gesch.*
hilos. d. Mittelalters, III. [Vol. 4], 458–472; Lasswitz, *Gesch. d. Atomistik*,
3–351. — Tr.

The Latin text reads, "suas suspectas reddunt," as though the writer had
ind those holding the view rather than the view itself with which the
ence began, and in consistency with which beginning the verb should
been "reddit." — Tr.

world and to assign their causes, nay, also that there can be no ot
things, although if we show that there is no need of other thi
besides mind, matter, space, and motion, by this very thing it v
be shown that the hypotheses of the moderns who employ th
things alone in the assignment of phenomena are the better. Fo
is a defect in an hypothesis to assume unnecessary things. Now tl
all things in the entire world can indeed be explained from th
alone, the reading of the modern philosophers sufficiently teaches, a
it is evident from the considerations which I put down a little bef
when I was showing the possibility of an Aristotelic harmony. Tl
it must also be noted that these hypotheses are the better which
the clearer. Now, indeed, the human mind can imagine nothing e
than mind (when, namely, it thinks of itself), space, matter, moti
and what results from these when united with each other; whate
else you add are words only, which can be named and variou
combined with each other, but cannot be explained and understo
For who can imagine to himself a being which partakes of neither
tension nor thought? What need therefore to posit souls of anim
and plants, the incorporeal forms of the elements, the substant
forms of the metals, devoid of extension? More correctly the
fore Campanella[1] in his book "De Sensu rerum et Magia," and Mar
Marci,[2] "De Ideis operatricibus," falsely indeed, yet in agreem
nevertheless with their hypotheses, attributed to these substant
forms of inanimate things, deprived of extension, sense, knowled
imagination, will. Nor is the occult philosophy of Agrippa,[3] who ac
an Angel as it were an obstetrician to everything, unlike it, nor t
discussions of Scaliger περὶ δυνάμεως πλαστικῆς and its intelligen
Thus it returns to as many little gods (*deunculos*) as substant
forms, and to a race almost πολυθεϊσμόν. For hence is attributed
them appetite, and the natural instinct from which also follo
natural cognition, hence these axioms: Nature does nothing in va
everything shuns its own destruction, like takes pleasure in li
matter desires a nobler form, and others of this description, sir
nevertheless there is, in truth, in nature no wisdom, no appetite, b
a beautiful Order springs out of it, because it is the clock of G
From these considerations it is evident that the hypotheses of t
reformed philosophy are superior to the scholastic hypotheses for t

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[1] Tommaso Campanella, 1568–1639. Brief account of his views is gi
in Lasswitz, *Gesch. d. Atomistik*, 1, 340–343. *Cf.*, also, Stöckl, *Gesch.*
Philos. d. Mittelalters, III. [Vol. 4], 343–366. — Tr.

[2] *Cf. infra*, p. 676, n. 2. — Tr.

[3] Heinrich Cornelius Agrippa von Nettesheim, 1486–1535. His *Opera omn*
Lugduni, 1600; the *De occulta philosophia* in Vol. 1. For an account of
views, *cf.* Stöckl, *Gesch. d. Philos. d. Mittelalters*, III. [Vol. 4], 412-4
Lasswitz, *Gesch. d. Atomistik*, 1, 290–293. — Tr.

ı, because they are not superfluous, while, on the other hand, they ear.

emains for us to prove by more subtle reasoning that other es than those I have mentioned cannot indeed be assumed plaining the nature of bodies. It will be done thus: All call body which is endowed with some sensible quality, then out sensible qualities many can be taken away, provided never-s that the body remains. For although a body is deprived of lor, odor, taste, yet it is called a body. For you will grant air, for example, is a body, although it is transparent, and ; colored, besides it is devoid of taste, and for the most part also h odor and sound. Therefore the qualities visible, audible, and of taste and smell, may be cast aside as least constitutive e nature of body. To tactile qualities, therefore, everything ıs. And indeed these primary qualities — heat, moisture, dry-cold — can each be absent; heat can be absent from water, ure from the earth, dryness from the air, cold from the fire, and ıy of these is a body. The other tactile qualities — for example, hness, lightness, tenacity, etc., are acknowledged even by you belong to the constitutive nature of a body, for this very ı, because they are called secondary, and so have arisen from , and further because there is no one of them which cannot be t from a body. There remains, therefore, to be sought for some le quality which is competent to all and single bodies and from as it were by a sign men may distinguish body from non-body. without doubt is density (*crassities*), or ἀντιτυπία, taken with sion. Whatever men certainly think extension is (although ıth it always is body and has ἀντιτυπία, although insensible , yet perceptible by the intellect), they do not at once call that for they sometimes think that it is a mere appearance and *σμα*. But whatever they not only see but also touch, that is, in they find ἀντιτυπία, that they call body; but whatever lacks πία, that they deny to be body. In the two, therefore, men educated and uneducated place the nature of body, in extension ντιτυπία taken together; they take that from sight, this from ; whence also from the union of both senses we are wont to be ed concerning things that they are not phantasmata. But sion is nothing else than existence in space; ἀντιτυπία is the ity to exist with another in the same space, but the one or the (*alterutrum*) must be moved or keep quiet. From these con-tions it is evident that the nature of body is constituted by sion and antitypy, and since there is nothing in things without , nothing even must be assumed in bodies, the cause of which t be made to appear from their primary constitutive principles. the cause cannot be made to appear from these except through their definitions. Nothing, therefore, is to be assumed in bod which does not flow from the definition of extension and antity But there flow from this definition only magnitude, figure, positi number, mobility, etc. Motion itself does not flow from these. When properly speaking, motion is not given in bodies as a real enti in them, but I have demonstrated that whatever moves is continua created, that bodies at any instant in assignable motion are son thing, at any intervening time between the instants in assigna motion are nothing, a thing which was unheard of till now, b which is plainly necessary and will shut the mouth of the atheis From these considerations it is evident that the explanation of qualities and changes must be taken from magnitude, figure, moti etc., and that heat, color, etc., are nothing but subtile motions a figures. As to what remains, I dare affirm that atheists, socinia naturalists, sceptics, would never have been truly met unless by t established philosophy; which I indeed believe a gift of God giv to the old age of the world as an unique plank by which pious a prudent men are about to save themselves in the shipwreck of t now overhanging atheism. However small my knowledge of learn men after a little time, I nevertheless tremble as often as I think h many men at the same time intellectual and absolutely atheis I have met. And there is flying through the hands of men unknown book of Bodin[1] (and would, as I wish in the case Naudæus, it was never to be published), powerful certainly, which calls, "Arcana sublimium," in which he is the professed ene of the Christian religion. The dialogues of Vaninus[2] are child's p when compared with it. I have read it carefully, and I thank from my heart, because he furnished me with those defences

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[1] Jean Bodin, 1530–1596 or 1597, the eminent writer on Political Scien and advocate of tolerance in religion, published his greatest work, — "the fi elaborate attempt in modern times to construct a system of political scienc — *Les six Livres de la République,* at Paris, 1576. His *Universæ natu theatrum* appeared at Hanover, 1605, the Preface dated February 25, 15 For some account of its doctrine, *cf.* Lasswitz, *Gesch. d. Atomistik,* 1, 3 327, 411–413. G. E. Guhrauer published an Abstract, in German, witl partial translation of the Latin text, of his very famous MS., here referred by Leibnitz, the *Colloquium heptaplomeres de abditis rerum sublimium ar nis,* Berlin, 1841, and the complete original text, from a MS. in the Gies Library, was edited and published by L. Noack, Schwerin, 1857. The worl "a conversation between seven learned men, — a Jew, a Mahometan Lutheran, a Zwinglian, a Roman Catholic, an Epicurean, and a Theist and "the conclusion to which they are represented as coming is, that t will live together in charity and toleration and cease from further disp tions as to religion." — Tr.

[2] Lucilio Vanini, 1585–1619, who called himself by the name, among oth of Julius Cæsar, was a disciple of Pomponatius (*cf. ante,* p. 581, n. 1). denied the immortality of the soul, and advocated a doctrine of panthei

sophy (in which I should be ungrateful, if I should deny that
ed much to you), by which I repelled his weapons with no
ılty. The labor of the distinguished Spizel is to be praised,
ı he now again expends in eradicating atheism. His letter
is subject, recently published (in these nine days), I think you
seen. Hear what happened to me in connection with him.
l written some time when at leisure, a leisure nevertheless
rbed in the inn, about two sheets, in which I was discussing
lemonstration more accurately than usual of the immortality
e soul and the existence of God. These I had sent to my
l. Through him they came into the hands of the Most Rev-
l Spener,[1] pastor at Frankfort, a neglected yet deserving author.
er sent them to Spizel;[2] Spizel placed them at the end of
recent letter of his to Ant. Reiser[3] on the eradication of
sm, under the title "Confessio naturæ contra atheistas." I
ot blame him, but I am grieved, because that σχέδιον was
ry incorrectly printed; that sorites, especially, by which I tried
emonstrate the immortality of the soul, was thrown into strange
ısion by the misplacing of its opening lines. Spizel acknowl-
l that he was ignorant of the author. I desire a judgment

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alism. He published *De admirandis naturæ reginæ deæque mortalium*
ıis, lib. quat., Paris, 1616. His philosophical works, translated into
:h by Rousselot, appeared at Paris, 1841. Leibnitz, in a letter to Sebas-
Kortholt, March 15, 1713, says: "Apologiam Vannini nondum vidi, nec
opere dignam legi puto. Scripta ejus parvi momenti sunt, sed homo
ıs, imo stultus comburi non merebatur, claudi jure poterat, ne alios
ret" (Dutens, 5, 321). — Tr.

hilip Jacob Spener, 1635–1705, was chief pastor of the Lutheran church
'ankfort-on-the-Main, from 1666–1686, first Court-chaplain at Dresden,
1691, and rector of St. Nicolas, in Berlin, with the title of "Consistorial-
" from 1691. He directed the foundation of the University of Halle in
Though, according to Ritschl, *Gesch. d. Pietismus*, 2, 163, Bonn, 1884,
self not a Pietist," Spener has justly been called "the father of Pietism."
as a voluminous author. Two letters of Leibnitz to Spener are given by
ıs, 5, 467–468. — Tr.

heophil Gottlieb Spitzel, or Spizel, 1639–1691, a German pastor and poly-
:ian, was deacon of St. James's church, Augsburg, in 1662 and pastor from
o 1690. "As a theologian, in spite of his many-sided and universal sci-
c interests, he remained well-nigh unfruitful." Leibnitz refers to the
r here alluded to again in his letter to Spizel, December 12–22, 1669; *cf.*
ıs, 5, 343. The *Confessio Naturæ contra Atheistas* first appeared as a
criptum in Theo. Spizelii de Atheismo eradicando ad Virum præstantis-
n Dr. Antonium Reiserum Augustanum, etc., Epistola. . . . August.
el. 1669. — Tr.

nton Reiser, 1628–1686, a learned and distinguished Lutheran theologian,
n earnest defender of evangelical truth. He published *De origine, pro-*
u et incremento antitheismi seu Atheismi, Augsburg, 1669, 8vo; *Index*
bibliothecæ Augustanæ, Augsburg, 1675, 4to. — Tr.

concerning the reasoning itself of the demonstration. Nor d seek praise, but criticism, since it is important to religion that be not perfunctorily defended. Although meanwhile I seem myself to have penetrated far more deeply into both. For neitl the thoughts which I have thrown out since that time concerni perpetual creation in motion, nor the inmost nature of thinki being or mind, are brought together therein. I wrote you at time about the society which certain Germans are starting. will show its existence by a German paper published by the bo seller Goezius with the title "Collegium Philadelphicum." But me it seems a pleasant dream, like the society of the Red Cro It is wonderful how great a dissension in Parnassus that Schu fleisch[1] who is with you excited. I very much wish to know wh the great men with you by whom he hopes he will be advanc think of this specimen. Boecler[2] threatens that one from the cou The author of the "Itinerarium politicum" which is now appeari is without doubt Burgoldensis,[3] that commentator on the "Inst mentum pacis." I am astounded at the audacity of the man.

As for the rest, most illustrious sir, I have discoursed the m ength of this whole matter to you for this reason, because I no more learned and equitable judge of these things. Since have examined all the recesses of the ancients and do not ɔise the discoveries of the moderns when deserving, you alone all can best examine this and also illustrate them. For you ıtly judge, that although new opinions are brought forth and r truth most evidently shown, yet from the views publicly ived we must scarcely ever depart, a thing which we should not ve for if the Scholastics had done it. Farewell, ornament of country, and do not bring to an end (*absolve*) your noble thoughts many are both begun and at the same time perfected with rare city of mind), but produce them.

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[1] Konrad Samuel Schurtzfleisch, 1641–1708, was Professor of History Wittenberg, and because of his great learning was given the nickname o living library and a walking museum. While at Wittenberg he publish under the name of Eubulus Theosdatus Sarckmasius, a pamphlet, *Judicia novissimis prudentiæ civilis Scriptoribus*, Leipzig, 1669, in which he freely pressed his opinion of the most celebrated German jurisconsults, and wh aroused against him many adversaries. He continued the history of Sleid (*cf. ante*, p. 114, n. 1). — Tr.

[2] Johann Heinrich Boecler, 1611–1692, Professor of Eloquence at Strassbu and Upsala, and afterwards of History at Strassburg, was author of ma commentaries on classical authors and of works of history, politics, criticis morals, etc. Among them were: *De jure Galliæ in Lotharingiam*, Stra burg, 1663; *Ad Grotium de jure belli et pacis dissert., V.*, 1665. The Elec of Mayence appointed him "conseiller" in 1662, and the next year the E peror Ferdinand III. bestowed on him the same title and made him Cou Palatine. — Tr.

[3] Philippus Andrea Oldenburgerus, the anagram of which is Burgolden a pupil of H. Conring, was Professor of Law and History at Geneva, where died in 1678. He published a large number of valuable works, some of th under assumed names, among which are: *Itinerarium Germaniæ Politicu modernam præcipuarum Aularum Imperii faciem repræsentans*, Cosmop (Geneva), 1668, 12mo; *Limnæus enucleatus*, an abstract of Limné, *De j imperii Romano-germanici*, Geneva, 1670, fol.; *Notitia Imperii, sive Disc sus in Instrumentum Pacis Osnabrugo-Monasteriensis* (this work under name of Burgoldensis), Freistadt, 1669, 4to. Of the *Itinerarium Germa Politicum*, Morhof, *Polyhistoria*, 2, 497, says: "in quo multa est rerum in tissimarum farrago, quibus nonnunquam immiscentur aliqua notatu non digna, sed lectore prudente opus est, qui cum judicio illa legere posit." T freedom with which the author spoke of the political interests and vices of German courts led to the interdiction of his book. It was, neverthele

II

FRAGMENT[1]

[*From the Latin*]

'he primary matter[2] of Aristotle is identical with the subtile matter Descartes. Each is divisible to infinity. Each is *per se* lacking in n and motion, and each receives forms through motion. Each ives motion from mind. Each is formed into certain rings (*gyros*), there is no more solidity in the vortices of Aristotle than of cartes. Each has solidity from motion, because nothing drives ısunder, although Descartes himself has not assigned this cause solidity. Each ring (*gyrus*) extends (*propagat*) the action im- ssed through motion on account of the continuity of matter into ther ring. For Aristotle also, no less than Descartes or Hobbes, ives all particulars from the motion alone of universal rings. ence Aristotle adds intelligences only to the principal rings, ıuse from the impacts of these rings the actions of the others ow. In this Aristotle erred, because he made the earth the tre of the universe and of all gyrations. But he should be par-

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ral times reprinted. In Pt. IV. of his *Thesaurus rerum publicarum totius s*, Geneva, 1675, 4 vols., 8vo, he repudiated the errors and condemned the ehensible expressions which he had employed in the earlier work. Of the *ursus in Instrumentum Pacis*, Lenglet du Fresnoy remarks: "a bold and ned piece." — Tr.

Gerhardt, *Leibniz. philos. Schrift.*, 7, 259-60. In his *Einleitung*, *ibid.*, 251, ays: "The fragment, n. I., which was written, perhaps, at the time of the position of the *Hypothesis physica* (1671), contains a comparison of the aphysics of Aristotle and Descartes, what Leibnitz borrowed from both, what he has added of his own." — Tr.

Upon a bit of paper without date and superscription, proceeding according ıe handwriting from the earliest period. — *Gerhardt's Noté*. — Tr.

doned for this, because philosophy was not yet sufficiently instructe by observations.

To these I now add, that *primary matter if at rest is nothing.* Thi also is a statement which certain Scholastics have obscurely made that primary matter also has existence from form. Of this fac there is demonstration. Because whatever does not think, is nothing But that in which there is no variety also does not think. I like manner: If primary matter moves in one direction, that is in *parallel lines, it is at rest,* and consequently is nothing. *Al things are full,* because primary matter and space is the same thing Therefore *every motion is circular,* either composed of circulars o at least returning into itself. Many circulations mutually hinde each other, or mutually lead into each other. *Many circulations tr to unite in one* or all bodies tend to rest, that is, annihilation. *I bodies are without mind, it is impossible for motion to have been eternal. From universal conflicting circulations are produced particular bodies Matter is actually divided into infinite parts. There are infinite creature in any given body whatever. All bodies cohere among themselves. All ar indeed forcibly separated* (*distrahuntur*) *from all, but not without resistance. There are no atoms,* or bodies whose parts are never forcibl separated. There are two principles by which motion is changed compositions of efforts (*conatuum*), and compositions . . . [a wor and two lines are in consequence of the destruction of the pape illegible. — GERHARDT].

III

DEMONSTRATION AGAINST ATOMS TAKEN FRO THE CONTACT OF ATOMS[2]

October 23, 1690

[*From the Latin*]

DEFINITION I. A thing is distinguished from other things in tw ways, either through itself, or extrinsically. *Through itself a thing distinguished from another,* when a method of distinguishing throug the consideration alone of the thing is used, no operation or chang being made in the thing. *Extrinsically,* when by external applicatio something new is produced in the thing, which does not appear i

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[1] Over the words, "motum fuisse æternum," Leibnitz has written, "potes diminui sine fine," *i.e.* can be diminished without end. — *Gerhardt's Note.* — T

[2] Gerhardt, *Leibniz. philos. Schrift.*, 7, 284–288; Stein, *Leibniz. u. Spinoz* Beilage XIV., pp. 325–328. — TR.

other. Thus the sphere and the cube can be distinguished both
consideration and also by operation; by consideration, because in
sphere no angles are found, of which there are eight in the cube;
operation, as, if both are placed upon an inclined plane, the sphere
ll descend the plane by rolling, the cube by sliding.

Axiom. Whatever is distinguishable extrinsically from another, is
o distinguishable through itself.[1]

For example, let there be two coins from the same stamp (*typo*), one
true gold, the other of false, which may be easily distinguished
rinsically by the blow of the hammer. I say even before the
w, by an attentive consideration, differences in the composition
elf of each would be detected by the naked or equipped eye, and
hough the keenness of vision could not reach thither, yet differ-
es exist within and can be detected by some more acute creature
r example, by an angel).[2]

Observation. Certain bodies are mutually separated violently
m each other.

Conceded Hypothesis. Matter is uniform, or, motion and figure
epted, everywhere like itself.

Definition II. An *Atom* is a body which cannot be broken.

Postulate. If there are atoms, we may assume them of any figure
d size whatever and in any position whatever.

THEOREM.

It is impossible for all bodies to consist of atoms.

Let us assume (by the postul.) three atoms, A, B, C, of which A is
ical, but B and C are triangular prisms, composing the cube D,
ilar and equal to the former A. The cube D cannot (by the
nceded hypothesis) be distinguished from the cube A. Therefore
ey cannot be distinguished extrinsically (by Axiom I.). If there-
e other bodies strike against the cube D, they will be able either
separate the atoms B and C, or they will not be able. If able to
arate them, then the same bodies striking in the same way against

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[1] On the margin of the Ms., Leibnitz has remarked: "Whatever is dis-
guishable in itself, is also distinguishable extrinsically. If two bodies are
ilar through a third similar body, they cannot be distinguished. If two
lies are *similar*, but mutually *unequal per se*, they can be distinguished,
third body even being assumed. Similar and equal bodies cannot be dis-
guished extrinsically, nay, rather, in any way, and so are one and the same."
Gerhardt's Note. — Tr.

[2] Stein here inserts in his text the following marginal gloss, wanting in
rhardt's text: "Hic ostenditur ex hypothesi Atomistica sequi, quod novæ
omi nasci possint, nec tamen iterum dissolvi contra naturæ morem," *i.e.*
re it is shown to follow from the Atomistic hypothesis, that new atoms can
produced, but nevertheless cannot again be dissolved contrary to the law
nature. — Tr.

the cube *A* will be able violently to separate the same into parts, fo otherwise *A* and *B* might be distinguished extrinsically (by Defin. I.) the contrary of which has been shown. But if the cube *A* is violently separated into parts, it certainly (by Defin. II.) will not be an atom, as was supposed. But if other bodies cannot again separate the cube *D* into component parts, it follows that the atom was not

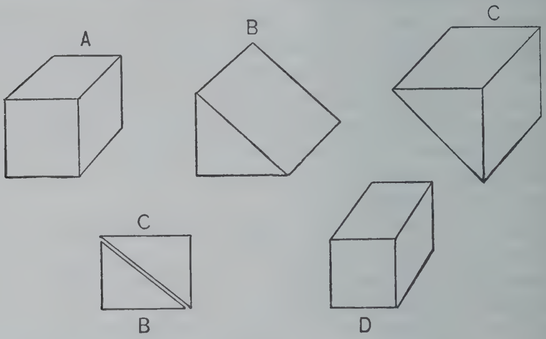

Fig. 1.

produced from non-atoms through contact. And the same principl will hold, whatever figure the atoms be assigned. Whence it follow that atoms which have once touched each other cannot again b violently separated. Now if all bodies are composed of atoms, bodie do not touch each other except through the atoms. Therefore the cannot be violently separated after contact, unless the atom of th one is violently separated from the atom of the other, which w have shown cannot be done. But bodies not be violently separated. . . .[1] And so it is not true that all bodies are composed o atoms. Q. E. D.

Scholium to the Demonstration against Atoms Take from the Contact of Atoms.

October 24, 1690.

I do not see what reply can be made to this demonstration unles by a denial of the postulate. For we postulated that it be concede us: If there are atoms, they can be assumed of any figure and siz and in any position whatever. This alone seems possible to be said wit any reason, atoms cannot be granted, the parts of which are connecte only by a point or line. And so there cannot (for example) be a

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[1] More words illegible. — *Gerhardt's Note.* Stein omits this incomplet sentence. — Tr.

m similar to one composed from two spheres touching each other.
t if then atoms spherical or terminated by any other curved sur-
es whatever are granted, they never touch each other save in a
int, and so never compose a body similar to an atom. Here in
ne way I think a reply can be made, in the first place if the contact
the surface is the cause of stability, it follows that stability is
eater when the surface is greater. Whence the atoms would not
equally stable. And so there would be a certain determinate
ce of violent separation by which stabilities could be measured.
lo not see where we can find this force, if it is not in the motion of
dies, unless we advocate certain spiritual powers whose method of
ting in bodies nevertheless cannot be known. But if the stability
all atoms is equal, it does not matter how great the contact is;
en contact in a line, nay in a point, would suffice.

A second reply which can be made is this: it has at least been
monstrated by us that bodies cannot be composed of atoms ter-
nated by plane sides. But besides the fact which can be doubted,
ether indeed curvilinears properly called are granted, this excep-
n does not seem in agreement with the reasons of things, that if
mposition from atoms is possible it must necessarily take place
rough bodies destitute of a plane surface.

The third reply is this: not only the atoms of plane surfaces but
so of concave must be assumed (*tollendas*) from nature. Otherwise
shall be permitted to make atoms from the non-atom, as often as
e concave surface of one atom happens to be applied to the convex
rface of another, and that will happen until all the atoms of the
ncave surfaces shall be filled as far as can be done by the convex
isting in nature. But this restriction also does not seem in har-
ony with the reasons of things. And in general, if any one denies
at there are other atoms than the perfectly spherical, in order to
cape the force of the demonstration, these things are devised which
deed are accommodated to the latter, but do not accord with the
imal reasons and amplitude of nature. In brief: from the hypo-
esis of atoms I can deduce absurdity, provided I am allowed to
sign to the atoms size, figure, and motion as I will.[1]

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[1] On the margin of the Ms., Leibnitz has remarked: "Another argument
ld be set up, namely: If atoms could be granted, bodies similar and equal,
d nevertheless different from each other, as would be two equal spheres,
ld be granted. If atoms were granted, no cause of reflection, which in fact
st be taken from an elastic body (*Elaterio*), could be perceived, nor would
atoms striking each other leap apart, in turn, from each other. Further
perficial contact is the cause of cohesion, two atoms coming together in
es or surfaces would not leap apart; thus, if the velocity of each approach
qual, the whole force would perish." — *Gerhardt's Note.* Stein has put this
rginal gloss into the text, with a note stating that it is a marginal gloss.
TR.

Appendix to the Demonstration against Atoms take from the Contact of Atoms.

If any one denies that there can be atoms, the parts of which touc each other in a point only or line, and so requires contact in the su face for cohesion, that he may avoid the force of our demonstratio that one will entangle himself in other new difficulties.

For if cohesion arises from superficial contact, a case can be see in which an atom is unable to graze (*radere*) an atom ; for where part of the side of the atom *B* coincides with part of the side of the atom $_3A$, they are n only unable to leap apart and also to separa violently, but even the one will not be able slide upon the other, for they touch each oth in the surface. Nay, rather, what is mo wonderful, the atom *A* coming by its own m tion from the place $_1A$ into the place $_2A$ situated, that it is unable to proceed farther, because it grazes t atom *B*, is there arrested without any obstacle as if it were an e chanted object. Nor does it suffice to say that no such atoms a given, and that no others exist unless spherical or at least bound by convex surfaces. For it suffices that atoms bounded by plain concave sides are possible, if those bounded by convex sides a possible; and from the supposed possibility of these that which absurd follows, whence it follows that convex atoms are not to admitted.

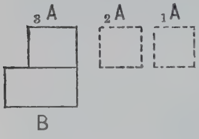

Fig. 2.

But if any one because of these considerations now requires longer superficial contact only, but also the rest of bodies tangent each other for cohesion, lest forsooth one atom be kept from slidi upon another, that one is unable to bring forth proof of his opinio nor does it appear why the nature and the force of the present sta which is contact must depend upon a past state, so that forsooth t present contact causes cohesion, if it has remained for some consid able time in the same place, as if there were need of a certain ha tude, whence indeed it would follow that stability is increased duration and that atoms newly produced are the more stable t longer they cohere, a fact which no one will surely easily affirm. B neither can the moment be assigned in which the cohesion of t atoms begins, because it is entirely perfect at once. And if it do not begin unless it has continued for some time, it will never beg for it would itself be prior to itself. Moreover, all rest can be und stood as composed of two motions, so that if a body is moved at t same time by two moving bodies and so remains quiet accidental, shall it then be understood also to adhere to the sides of another bo ich it grazes? And so whithersoever we are turned, we fall into ορα, which is not strange, because we assumed an hypothesis lack- g in reason, namely, that the highest stability is without an intelli- ble cause.

But if any one thinks that atoms can be produced at least by the cree of God, we confess to him that God can make atoms, but a rpetual miracle would be needed to resist a forcible separation, ice in a body itself a principle of perfect stability cannot be per- ived. God can perform whatever is possible, but it is not always ssible to transfer his power to creatures, and to bring it to pass at they themselves can do *per se* what they accomplish through his m power alone.

IV

SSAY ON DYNAMICS ON THE LAWS OF MOTION, IN WHICH IT IS SHOWN THAT NOT THE SAME QUANTITY OF MOTION IS PRESERVED, BUT THE SAME ABSOLUTE FORCE, OR RATHER THE SAME QUANTITY OF MOVING ACTION (*L'ACTION MOTRICE*)[1]

[*From the French*]

The opinion that the same quantity of motion is preserved and ides in the concourse of bodies has reigned a long time, and passed an incontestable axiom among modern philosophers. We under- and by the *quantity of motion* the product of the mass by the velocity, that the mass of the body being as 2 and the velocity as 3, the antity of motion of the body will be as 6. Thus if there were two ncurrent bodies, multiplying the mass of each by its velocity and king the sum of the products, it is maintained that this sum must the same before and after the concourse.

We begin now to be disabused of this opinion, especially since it s been abandoned by some of its most ancient, most skilful, and ost eminent defenders, and above all by the author himself of the Search after Truth."[2] But in this case an inconvenience has arisen, mely, that we have been thrown too far into the other extreme, and not recognize the conservation of anything absolute which might ld the place of the quantity of motion. But our mind looks for is, and it is for this reason that I remark that philosophers who do not enter into the profound discussions of mathematicians have dif culty in abandoning an axiom such as this of the quantity of con served motion without giving themselves another to which they ma hold.

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[1] Gerhardt, *Leibniz. math. Schrift.*, II. 2 [Vol. 6], pp. 215–231. Published m the Ms. in the Royal Library at Hanover. Written, according to Ger- rdt, probably about 1691, *cf. op. cit.*, *Einleitung*, p. 14. — Tr.

[2] *Cf. ante*, p. 176, note 1. — Tr.

It is true that the mathematicians who a long time since establishe the rules of motion based on experiments have remarked that th same relative velocity is preserved between the concurrent bodie For example, if one of the two is at rest, or if both are in motion, an proceed the one against the other, or in the same direction, there is relative velocity, with which they approach or depart the one from th other; and we find that this relative velocity remains the same, s that the bodies depart after the impact with the velocity with whic they were approaching before the impact. But this relative velocity ca remain the same although the true velocities and absolute forces the bodies change in an infinite number of ways, so that this conse vation does not concern that which is absolute in bodies.

I remark also another conservation, namely, that of the quantity progress, but neither is this the conservation of that which is abs lute. I call *progress* the quantity of motion with which a body pr ceeds in a certain direction, so that if the body went in a contrar direction, this progress would be a negative quantity. Now if two more bodies are concurrent, we take the progress from the directio whence proceeds their common centre of gravity, and if all thes bodies proceed from the same direction, then we must take the su of the progress of each for the total progress; and it is plain that i this case the total progress and the total quantity of motion of th bodies are the same thing. But if one of the bodies proceeded from contrary direction, its progress in the direction in question would negative and consequently must be subtracted from the others i order to have the total progress. Thus if there are only two bodie one of which proceeds in the direction of the common centre, and th other in a contrary direction, from the quantity of motion of the fir must be subtracted that of the second, and the remainder will be th total progress. Now it will be found that the total progress is co served, or that there is as much progress in the same direction befo or after the impact. But it is also plain that this conservation do not correspond to that which is demanded of something absolut For it may happen that the velocity, quantity of motion, and force bodies being very considerable, their progress is null. This occu when the two opposed bodies have their quantities of motion equa In such case, according to the sense we have just given, there is total progress at all.

Long since I corrected and rectified this doctrine of the conse vation of the Quantity of Motion, and put in its place the co servation of some other absolute thing; but as regards the precis

rm in which this doctrine should be conceived,[1] that is to say, the
nservation of absolute force, it is true that commonly they do not
pear to have entered sufficiently into my reasons nor to have appre-
nded the beauty of that which I have observed, as I remark in all
at has been published in France or elsewhere on the laws of motion
d mechanics, even after what I have written on Dynamics. But as
me of the most profound mathematicians after many discussions
ve yielded to my opinion, I promise myself with time general ap-
oval. To return then to what I said of the conservation of absolute
rce, we must know that the origin of the error concerning the quan-
y of motion arises from that which has taken it as force. We have
en led, I think, naturally to believe that the same quantity of the
tal force abides before or after the impact of the bodies, and I have
und this very true. Now the quantity of motion and force being
ken as one and the same thing, we have concluded that the quan-
ty of motion is conserved. What has contributed the most to con-
und force with quantity of motion is the abuse of the static doc-
ine. For we find in statics that two bodies are in equilibrium when
virtue of their position their velocities are reciprocal to their
asses or weights, or when they have the same quantity of motion.

But we must know that this equality of force in this case arises
om another principle, for generally *absolute force* must be estimated
y the violent effect which it can produce. I call *the effect violent*
hich consumes the force of the agent, as, for example, to give such
velocity to a given body, to raise a given body to such a height, etc.
nd we can conveniently estimate the force of a heavy body by the
roduct of the mass or of the weight multiplied by the height to
hich the body might rise by virtue of its motion. Now two bodies
eing in equilibrium, their heights to which they might rise or from
hich they might descend are reciprocal to their weights, or rather
e products of the heights by the weights are equal. And it happens
nly in the case of equilibrium or of dead force, that the heights are
the velocities, and that thus the products of the weights by the
elocities are as the products of the weights by the heights.[2] This,
say, happens only in the case of *dead force*, or of the infinitely small
otion which I am accustomed to call *solicitation*, which takes place

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[1] The French is: "Mais justement de cette chose qu'il fallait." — Tr.

[2] On the margin of the manuscript Leibnitz has remarked: "Thus it is
stonishing that Descartes has avoided so well the rock of velocity taken for
rce, in his little treatise on Statics or dead force, where there was some
anger, having reduced all to weights and heights, when it was indifferent,
nd that he has abandoned the heights for the velocities in the case where
e should have done wholly the contrary; that is to say, when he discusses
ercussions or living forces which must be measured by weights and heights."
- *Gerhardt's Note.* — Tr.

when a heavy body tries to commence movement, and has not ye conceived any impetuosity; and this happens precisely when bodie are in equilibrium, and, trying to descend, are mutually hindered But when a heavy body has made some progress in descending freely and has conceived some impetuosity or *living force*, then the height to which this body might attain are not proportional to the velocities, but to the squares of the velocities. And it is for this reaso that in case of living force the forces are not as the quantities o motion or as the products of the masses by the velocities.

Nevertheless it is noticeable, and has contributed to the error,[1] tha two bodies unequal in absolute living force, — for it is of this I speak — but whose quantity of motion is equal, can stop each other, whic fact has made men believe them absolutely equal in force; as, fo example two bodies *A* of mass 3 velocity 2, and *B* of mass 2 velocity 3 For although *A* is absolutely weaker than *B*, *A* being able to rais a pound only 12 feet, if *B* can raise a pound 18 feet; nevertheless i the concourse they can stop each other, the reason of which is tha bodies are hindered only according to the laws of dead or static force For being elastic as we suppose, they act between themselves only b dead forces or according to the equilibrium in the concourse, that i to say, by inassignable changes, because in pressing, resisting, an continually weakening each other more and more until they come t rest, they destroy one another at each moment only by the infinitel small motion, or dead force, equal on both sides; now the quantity o dead force is estimated according to the laws of equilibrium by th quantity of motion, infinitely small in truth, but whose continua repetition exhausts at last the whole quantity of motion of the tw bodies, which being supposed equal in both bodies, each quantity o motion is exhausted in the same time, and consequently the tw bodies are reduced to rest in the same time by the pressures of thei elasticities, which, restoring themselves afterwards, reproduce th motion. It is (in) this continual diminution of the quantity of motio according to the equilibrium in the concourse of the two elasticitie that the cause of this paradox consists, that two absolute unequa forces, but which have the quantities of motion equal, must stop eac other because this happens in a relative action where the contes takes place only according to the quantities of motion infinitely smal continually repeated.

Now it is found by reason and by experiment, that it is *living absolute force*, or that which is estimated by the violent effect it can produce, which is preserved, and nowise the quantity of motion. For i this living force could ever be augmented, the effect would be mor verful than the cause, or rather the perpetual mechanical motion, t is to say, which could reproduce its cause and something more, ich is absurd. But if the force could be diminished, it would perish ast entirely; for never being able to increase, and being able never- less to diminish, it would always go more and more into decay, which without doubt contrary to the order of things. Experiment con- ns it also, and we shall find always that if bodies should convert ir horizontal into ascending motions, they could always raise on whole the same weight to the same height before or after the pact, supposing that no force has been absorbed in the impact by parts of the bodies, when these bodies are not perfectly elastic, hout speaking of that which the medium, the base, and other cir- nstances absorb. But as this is a thing which I have sufficiently plained before, I will not repeat it here.

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[1] The French text reads: "Cependant il est remarquable et à contribuer l'erreur," etc. The reading should be: "et a contribué," etc. — Tr.

Now I am very happy to give still another turn to the matter and show further the conservation of something approaching more the ntity of motion, namely, *the conservation of moving action* (*l'action rice*). Here then is the general rule that I establish. Whatever nges may take place between concurrent bodies, of whatever num- , *there must always be in the concurring bodies between themselves alone same quantity of moving action in one and the same interval of time.* r example, there must be during this hour as much moving action the universe or in the given bodies, acting between themselves ne, as there will be during any other hour whatever.

To understand this rule, it is necessary to explain the estimate of ving action (*l'action motrice*), wholly different from the quantity motion, in the manner that the quantity of motion has been nt to be understood as has been explained above. Now in ler that the moving action may be estimated, we must first esti- te the *formal effect* of motion. This formal or essential effect of tion consists in that which is changed by the motion, namely, in quantity of the mass which is transferred, and in the space or in length through which this mass is transferred. There is the ential effect of motion, or that which finds itself changed: for this ly was there, now it is here: the body is so much and the distance so much. I conceive in order to greater facility that the body is ved so that each point describes a straight line equal and parallel that of every other point of the same body. I mean also a motion iform and continuous. This assumed, the *formal effect of motion* the product of the mass which is transferred multiplied by the gth of the removal, or rather the formal effects are in reason com- sed of the masses and the lengths of the removal, so that a body, as being transported the length of 3 feet, and another body, as 3, being nsported the length of 2 feet, the formal effects are equal. It is cessary carefully to distinguish what I here call the *formal effect*, or that essential to motion, from that which I called above the *viole* *effect.* For the violent effect consumes the force and is exercise upon something without; but the formal effect consists in the body motion, taken in itself, and does not consume the force, and eve conserves it rather, since the same translation of the same mass mu always be continued, if nothing from without prevents; it is for th reason that the absolute forces are as the violent effects which co sume them, but nowise as the formal effects.

Now it will be easier to understand what moving action (*l'actio* *motrice*) is: it must then be estimated not only by the formal effe which it produces, but also by the vigor or velocity with which it pr duces it. We wish to transport 100 pounds to a distant place; th is the formal effect which is demanded. One desires to do it in o hour, another in two hours; I say that the action of the first is doub that of the second, being doubly quick with reference to an equ effect. I suppose always continual and uniform motion. We m say also that a body, as 3, being transported the length of 5 feet, in minutes, is the same action as if a body, as 1, were transported t length of one foot in one minute.

This definition of moving action (*l'action motrice*) is justified su ciently *a priori* because it is manifest that in a purely formal acti taken by itself, as is here that of a moving body considered by itse there are two points to examine, — the formal effect or that which changed, and the promptness of the change; for it is very manife that that which produces the same formal effect in less time is t more active. But if any one is obstinately bent upon disputing wi me this definition of moving action, it would suffice me to say that am free to call moving action what I just explained, provided th nature justifies afterwards the reality of this nominal definition, whi will be when I shall show that it is precisely this whose quanti nature conserves.

Now since moving action is that which comes by multiplying t formal effect by the velocity, I wish to give more distinctly the es mate of velocity. We know that when two movable bodies run ov uniformly the same space in unequal times, the velocity of that o which runs over it in less time will be the greater, in proportion as t time is shorter. Thus the spaces gone over being equal, the velociti are reciprocally proportional to the times. But if the times we equal, the velocities would be as the spaces gone over. For one bo in motion having gone over a foot in one minute, and the other t feet, it is manifest that the velocity of the second is double. Th the velocities are in reason composed of the direct of the spaces go over and of the reciprocal of the times employed. Or what is t same thing, to estimate the velocity, we must take the space a divide it by the time. For example, *A* accomplishes 4 feet in onds and B 2 feet in 1 second; the velocity of A will be as 4 ided by 3, namely as $\frac{4}{3}$, and the velocity of B will be as 2 divided 1, namely as 2, so that the velocity of A will be to that of B as $\frac{4}{3}$ to that is to say, as 2 to 3.

Now the question is to verify the conservation of the moving action (*ction motrice*). I can give its general demonstration in a few rds, because I have already proved elsewhere that the same force is served, and because at bottom the exercise of force or the force en at the time is action, the abstract nature of force consisting ly in that. Thus since the same force is conserved, and since action the product of the force by the time, the same action will be conved in equal times. But I wish to verify it by the detail of the laws motion established by experiment and commonly received. I shall tent myself with one example; but we shall find it the same in ry other example we might choose. And indeed we could see at e the general reason of it, by making the calculation *in abstracto*, or general and by letters, without employing any particular numbers. t to suit the intelligence of everybody I prefer to give an example numbers.

Let there be a right angle LMN (Fig. 3), whose sides LM, MN may

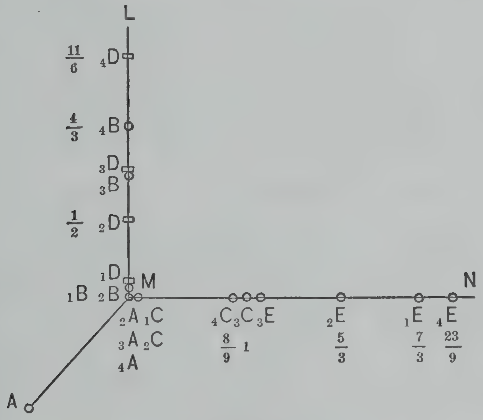

FIG. 3.

prolonged at discretion. Let a straight line AM be taken, so that longed beyond the point M it would cut the angle LMN into two ual parts. We might consider ${}_1AM$ as the hypotenuse of a square ose side may be called 1. This being so, I suppose that the body, A,[1]

We take no account here of the thickness of the bodies, which we suppose onsiderable.—*Leibnitz's Note.*

being in the place ${}_1A$ at the moment 1, A goes from the point ${}_1A$ to t point M, during the time 1, 2, and there meets at the moment 2 t two bodies B and C, which had been in repose during the 1, 2, whi is known in the figure in that their place is designated by ${}_1B$ and ${}_2B$, as also by ${}_1C$ and by ${}_2C$. Now the body A meeting the two bodi in M at the moment 2, being in M or ${}_2A$, will drive them forward a come to rest in M, a point which will also be ${}_3A$ and ${}_4A$, because A w remain there during the times 2, 3 and 3, 4, as I suppose the tw mutually equal, and to the times 1, 2. But B will go towards L fro the moment 2 during the time 2, 3 with a velocity as 1, and will me at the moment 3 the body D, which had before gone in front of during the times 1, 2, from the place ${}_1D$ to the place ${}_2D$, and durin the times 2, 3, from the place ${}_2D$ to the place ${}_3D$, with a velocity as Now B, meeting D at the moment 3, will give it the velocity ${}_3D_4$ that is to say, in the times 3, 4, ${}_1D$ will reach ${}_4D$, and during th time, B will go from ${}_3B$ to ${}_4B$ with the velocity ${}_3B_4B$. It will be th same on the other side, where C, pushed by A in the moment 2, wi go towards N with the velocity 1, and will meet, at the moment 3, th body E, which goes against it, having gone before, during the times 1, from the place ${}_1E$ to the place ${}_2E$, and during the times 2, 3 from th place ${}_2E$ to the place ${}_3E$, with a velocity as $\frac{2}{3}$. Now C, meeting E the moment 3, will give it the velocity ${}_3E_4E$; that is to say, that i the times 3, 4, it comes from ${}_3E$ to ${}_4E$. And during this time, C wi go from ${}_3C$ to ${}_4C$ with the velocity ${}_3C_4C$.

The register of the masses and velocities follows.

The masses of the bodies A, B, C, D, E are 1, 1, 1, 2, $\frac{1}{2}$.

During the times 1, 2 the velocities of the bodies A, B, C, D, E a $\sqrt{2}$, 0, 0, $\frac{1}{2}$, $\frac{2}{3}$.

During the times 2, 3 the velocities of the bodies A, B, C, D, are 0, 1, 1, $\frac{1}{2}$, $\frac{2}{3}$.

During the times 3, 4 the velocities of the bodies A, B, C, D, are 0, $\frac{1}{3}$, $\frac{1}{9}$, $\frac{5}{6}$, $\frac{14}{9}$, where it is to be remarked that the body C, instea of advancing, reflects backward with the velocity $\frac{1}{9}$.

The justification of these numbers will be found in the rul or equations which we shall assign farther on.

Let us now make the calculation of the moving actions (*actio motrices*) during the times equal between them — 1, 2; 2, 3; 3, 4.

During the times 1, 2.

A is in mass 1, the length of the transfer ${}_1A_2A$ is $\sqrt{2}$. The multiplying one by the other, the formal effect is $\sqrt{2}$. T velocity comes from dividing the length $\sqrt{2}$ by the time 1, whic makes $\sqrt{2}$. And multiplying the effect by the velocity, the movin action is 2.

B and C are at rest during this time in ${}_1B$, ${}_2B$, or ${}_1C$, ${}_2C$, cons quently their moving action is 0.

) is in mass 2, the length of the transfer $\frac{1}{2}$, the formal effect y $\frac{1}{2}$ or 1. The length $\frac{1}{2}$ being divided by the time 1, the velocity $\frac{1}{2}$ ses, and the effect multiplied by the velocity is 1 by $\frac{1}{2}$, or $\frac{1}{2}$, which he action of D.

E is in mass $\frac{1}{2}$, the length of the transfer $\frac{2}{3}$, consequently the ect $\frac{1}{3}$. Now the length $\frac{2}{3}$ divided by 1 gives the velocity $\frac{2}{3}$, which, ltiplied by the effect, furnishes $\frac{2}{9}$ the action of E.

And the sum of all the moving actions of the bodies A, B, C, D, during the times 1, 2, is $2+0+0+\frac{1}{2}+\frac{2}{9}=\frac{49}{18}$.

During the times 2, 3.

A is at rest, and its action is 0.

B is in mass 1, the length of the transfer 1 (namely, ${}_2B_3B$), the mal effect 1; the length 1 divided by the time 1 gives the velocity which, being multiplied by the effect 1, 1 arises, which is the action B.

C; the calculation is the same in regard to C and there arises the ne action 1.

D has the same action as in the preceding time; namely, $\frac{1}{2}$.

E likewise has the same action as in the preceding time; namely, $\frac{2}{9}$.

And the sum of all the moving actions of the bodies A, B, C, D, E, ring the times 2, 3, is $0+1+1+\frac{1}{2}+\frac{2}{9}=\frac{49}{18}$, as before.

Finally, during the time 3, 4.

A is at rest, and its action is 0.

B is in mass 1, the length of the transfer, namely, ${}_3B_4B$, is $\frac{1}{3}$, consently the effect is $\frac{1}{3}$. The same length, $\frac{1}{3}$, divided by the time 1, res $\frac{1}{3}$ for the velocity, which multiplied by the effect, $\frac{1}{9}$ arises, the ion of B.

C is in mass 1, the length of the transfer ${}_3C_4C$ is $\frac{1}{9}$, consequently formal effect is $\frac{1}{9}$. For it matters not here when we seek absolute ngs, whether C advances by ${}_3C_4C$, or reflects backward, as it does fact. The same length, $\frac{1}{9}$, divided by the time 1 gives the velocity $\frac{1}{9}$, ich, multiplied by the effect, there arises $\frac{1}{81}$ as the action of C.

D is in mass 2, the length of the transfer ${}_3D_4D$ is $\frac{5}{6}$, consequently effect is $\frac{5}{3}$. The same length divided by the time 1 is $\frac{5}{6}$, or the locity, which multiplied by the effect, there arises $\frac{25}{18}$, which is the tion of D.

E is in mass $\frac{1}{2}$, the length of the transfer is $\frac{14}{9}$, the effect $\frac{7}{9}$. The me length divided by the time 1 is $\frac{14}{9}$, that is to say, the velocity, ich, multiplied by the effect, produces $\frac{98}{81}$ for the action of E.

And the sum of all the moving actions of the bodies A, B, C, D, E, ring the time 3, 4, is

$$0+\frac{1}{9}+\frac{1}{81}+\frac{25}{18}+\frac{98}{81}=\frac{18+2+225+196}{162}=\frac{441}{162}=\frac{49}{18},$$

in each one of the preceding times.

I have followed in this calculation the general method, for as t moving actions are not only equal in equal times, but proportional the times in unequal times, I have divided the space by the time, order to have the velocity; but when the time is always the same, here, and thus we can take it as unity, the division by the time chang nothing, and consequently for the velocity we can take the number the length of the transfer, the velocities being as the spaces: when it is manifest that the effect being the product of the mass and t space, and the velocity being as the space, the action is as the produ of the mass by the square of the space of the transfer (we mean horizontal transfer in falling bodies), or as the product of the mass the square of the velocity. Now, I shall prove, further on, in the equation, that the sum of these products of the masses by the squar of the velocities is conserved in the concourse of the bodies. Co sequently, it is proved that the moving action is conserved, witho speaking of other proofs by which I have shown elsewhere that t forces are conserved, and that the forces are as the products of t masses by the squares of the velocities, while the actions are the products of the forces by the times, so that if we did not kno elsewhere this estimate and conservation of force, we might learn here, in finding by the calculation in detail, or even in general, by t 3d equation, further on, that the moving action is conserved; now is clear that the moving actions are in reason composed of the forc and the times, and the times being the same, the moving actions a as the powers or forces.

But shall we be astonished whence comes this success, which wi never fail, however intricate may be the example which we ma choose? It may be proved *a priori*, independently of the rules motion received; and this is what I have shown many times in di ferent ways. But here I shall show that it is proved by these ve rules of percussion which experience has justified, and whose *rationa* we may give by the method of a boat, as Huygens has done, and i many other ways, although we are always obliged to assume somethi non-mathematical, which has its source higher. But I shall redu the whole to three equations very simple and beautiful, and whic contain all which concerns the central concourse of two bodies in o and the same straight line.

Conspiring velocities
of the body a before the impact v after x.
b y z.

I call these *conspiring velocities*, because I suppose they all tend fro the side whence proceeds the centre of gravity common to the tw bodies. But if perchance any velocity proceeds really in the contra direction, then the letter which expresses the conspiring velocity si nifies a negative quantity. But we shall always take the body a as

y whose velocity is really conspiring, or proceeds from the side of
centre of gravity before the impact, and also in such a manner
; the body a follows and does not precede the common centre of
vity. Thus the signs do not vary in v, but they may vary in y, z, x.
e, now, are our three equations:—

. *Lineal equation*, which expresses the conservation of the cause
he impact, or of the relative velocity

$$v - y = z - x,$$

. $v - y$ signifies the relative velocity between the bodies before the
act with which they approach, and $z - x$ signifies the relative
ocity with which they depart after the impact. And this relative
ocity is always the same in quantity before or after the impact,
posing that the bodies are very elastic, which this equation states.
s necessary only to remark that while the signs vary in the explica-
of the detail, this general rule will embrace all the particular
es. This also occurs in the following equation:—

I. *Plane equation*, which expresses the conservation of the common
otal progress of the two bodies

$$av + by = ax + bz.$$

all *progress* here the quantity of motion which proceeds from the
e of the centre of gravity, so that if the body b, for example, should
ceed in the contrary direction before the impact, and thus its con-
ring velocity y be negative or be expressed by $-(y)$, understand-
; by (y) mass (*molem*), or that which is positive in y, then the
gress of a will be av, the progress of b will be $-b(y)$. And the
al progress will be $av - b(y)$, which is the difference of the quanti-
s of motion of the two bodies. If the bodies a and b proceed from
e and the same side before and after the impact, these letters, v, y,
z, signify only conspiring velocities real or affirmative, and conse-
ently in this case it appears by this equation that the same quantity
motion will be conserved after and before the impact. But if the
dies a and b should proceed in a contrary direction before the
pact and in the same direction after the impact, the difference of
quantity of motion before the impact would be equal to the sum
the quantity of motion after the impact. And there will be other
ilar variations according to the variation of the signs of the letters
x, z.

III. *Solid equation*, which expresses the conservation of the total
solute force or of the moving action

$$avv + byy = axx + bzz.$$

is equation has this excellence, that all the variations of the signs
ich can arise only from the diverse direction of the velocities y, x,
y cease, by the fact that all the letters which express these veloci-

ties mount here to the square. Now $-y$ and $+y$ have the sam
square $+yy$, so that all these different directions of y produce notl
ing more. And it is also for that reason that this equation giv
something absolute, independent of the relative velocities, or of tl
progressions from a certain side. The question here concerns only tl
estimating of masses and velocities, without troubling ourselves fro
what side these velocities arise. And this it is which satisfies at tl
same time the rigor of the mathematicians and the wish of the philos
phers,—the experiments and reasons drawn from different principle

Although I put together these three equations for the sake of beaut
and harmony, nevertheless two of them might suffice for our need
For, taking any two of these equations, we can infer from the
the remaining one. Thus, the first and the second give the thi
in the following manner. By the first, we shall have $v + x = y +$
by the second, we shall have $a, v - x = b, z - y$; and, multiplying o
equation by the other, according to the corresponding sides, we sha
have $a, v - x, v + x = b, z - y, z + y$, which makes $avv - axx = bzz - by$
or the third equation. In the same way, the first and the third gi
the second; for $a, vv - xx = b, zz - yy$, which is the third, divided
the first $v + x = z + y$, side by side, we shall have $a, vv - xx, :, v + x =$
$zz - yy, :, z + y$, which makes $a, v - x = b, z - y$, that is, the secon
equation. Finally, the second and the third equation give the firs
For the third $a, vv - xx = b, zz - yy$ divided by the second, namel
by $a, v - x = b, z - y$, gives

$$\frac{a, vv - xx}{a, v - x} = \frac{b, zz - yy}{b, z - y},$$

which makes $v + x = z + y$, according to the first equation.

I would add only one remark, which is that many distinguis
between hard and soft bodies, and the hard themselves as elast
or not, and build thereupon different rules. But we may take bodi
naturally as hard-elastic, without however denying that the ela
ticity must always come from a fluid more subtile and penetratin
whose motion is disturbed by the tension or by the change of tl
elasticity. And as this fluid must be composed itself in its turn
little solid bodies, elastic between themselves, we see well that th
replication of solids and of fluids continues to infinity. Now th
elasticity of bodies is necessary to nature, in order to obtain tl
execution of the grand and beautiful laws which its infinitely wi
author has proposed, among which not the least are these two la
of nature which I first made known, *the first* of which is *the l*
of the conservation of absolute force or of moving action in the u
verse, with some other absolutely new conservations which depe
upon it and which I will explain some day, and *the second* is
law of continuity, in virtue of which, among other effects, every chan

ust take place through inassignable passages and never by a leap.
his also is the reason why nature suffers no hard non-elastic
dies. In order to show this, let us pretend that a hard non-elastic
obe proceeds to strike against a similar globe at rest: after the
npact it is necessary that the two globes rest, in which case the
w of the conservation of force is violated, or that there be some
otion and that the globe which was at rest receive it, being unable
be taken as immovable, although even if it should feign to be
ch, the striking body (in order to preserve the force) would nec-
sarily be reflected suddenly backward. This is a forbidden (*defendu*)
ange, since it would be by a leap, a body which proceeds from a
rtain side being obliged to abate its motion, even to rest, before
ginning to proceed gradually further and further backward. But
e globe which is struck being obliged to receive motion, there
ill also be a change by a leap, the struck globe which was at rest
ing obliged to receive a certain degree of velocity suddenly, not
ing pliable so as to receive it gradually and by degrees. It being
so manifest, as is necessary, either that the globe striking passes
ddenly to rest, which would be already a change by a leap, or that
this striking globe retains a certain velocity, the struck globe which
as at rest receives suddenly an amount which is not less than that
the striking globe, since the globe struck must either stop the
riking globe, or go before it. Thus the striking globe passes
ddenly from velocity to rest, or at least the struck globe passes
ddenly from rest to a certain degree of velocity, without passing
rough the intermediate degrees, which is contrary to the law of
ntinuity, which admits no change by a leap in nature. I have also
any other reasons all of which concur in banishing hard non-elastic
dies, but this is not the place to enlarge upon them.

But it is necessary to admit, that although bodies must be thus
turally elastic in the sense which I have just explained, nevertheless
e elasticity often appears insufficient in the masses or bodies which
e employ, even if these masses should be composed of elastic parts
nd should resemble a sack full of hard balls which would yield to a
oderate impact, without leaving the sack, as we see in the case of soft
dies or those which yield without recovering themselves sufficiently.
he reason is that the parts are not sufficiently united therein to trans-
r their change to the whole. Whence it comes that in the impact of
ch bodies a part of the force is absorbed by the small parts which
mpose the mass, without this force being given to the whole; and
is must always happen when the pressed mass does not recover per-
ctly; although it also happens that a mass shows itself more or less
astic according to the different manner of the impact, witness the
ater itself which yields to a moderate impression, and makes a can-
on-ball rebound.

Now when the parts of the bodies absorb the force of the impact, as a whole, as when two pieces of rich earth or of clay come into collision, or in part, as when two wooden balls meet, which are much less elastic than two globes of jasper or tempered steel; when, I say, some force is absorbed by the parts, it is as good as lost for the absolute force, and for the respective velocity, that is to say, for the third and the first equation, which do not succeed, since that which remains after the impact has become less than what it was before the impact, by reason of a part of the force being turned elsewhere. But the quantity of progress, or rather the second equation, is not concerned therein. And even the motion of this total progress remains alone, when the two bodies proceed together after the impact with the velocity of their common centre, as do two balls of rich earth or clay. But in the semi-elastics, as two wooden balls, it happens still further that the bodies mutually depart after the impact, although with a weakening of the first equation, following this force of the impact which has not been absorbed. And in consequence of certain experiments touching the degree of the elasticity of this wood, we might predict what should happen to the balls which should be made of it in every kind of collision or impact. But this loss of the total force, or this failure of the third equation, does not detract from the inviolable truth of the law of the conservation of the same force in the world. For that which is absorbed by the minute parts is not absolutely lost for the universe, although it is lost for the total force of the concurrent bodies.

V

ESSAY ON DYNAMICS IN DEFENCE OF THE WONDERFUL LAWS OF NATURE IN RESPECT TO THE FORCES OF BODIES, DISCLOSING THEIR MUTUAL ACTIONS AND REFERRING THEM TO THEIR CAUSES[1]

[*From the Latin*]

PART I

From the time we made mention of the founding of a New Science of Dynamics, many distinguished men in various places have asked for a fuller explication of this doctrine. Since, therefore, we have not leisure to compose the book,[1] we will give in this place those things ich may kindle some light, which perhaps will return to us with erest, if, indeed, we shall elicit the opinions of those who unite rgy of thought with elegance of speech, whose judgments also we nly confess will be acceptable to us, and we hope useful in the set- g forward of the work. We have elsewhere suggested that there n corporeal things something besides extension, nay, prior to ex- sion, namely, the force itself of nature everywhere implanted by its thor, which consists, not in the simple faculty with which the schools m to have been content, but, besides, is provided with a tendency *natu*) or effort (*nisu*) which will have its full effect unless impeded a contrary tendency (*conatu*). This effort often appears to the ses, and in my judgment is known everywhere in matter by the son, even when it does not appear to the sense. But if now this ce must not be assigned to God through a miracle, it is certainly essary that this force in bodies themselves be produced from the ly itself, nay, that it constitute the inmost nature of bodies, since act is a mark of substances, and extension means nothing else than continuation or diffusion of the already presupposed struggling l withstanding, that is, resisting substance, so far is it from ng itself able to produce substance. Nor is it necessary, because ry corporeal action arises (*est*) from motion, and motion itself does exist unless from motion, either in the body already before exist- or impressed from something external to it (*aliunde*). For tion (just as time) never exists, if you reduce the thing to ἀκρί- αν, because a whole never exists, when it has not coexisting parts. d nothing is so real in itself, as that momentary increment (*momen- tum*) which must be constituted in a force striving for change. To s, therefore, returns whatever there is in corporeal nature besides object of geometry or extension. And by this method, in fact, ard is had at the same time for both the truth and the doctrine of ancients. And as our age has freed from contempt the atoms of nocritus, the ideas of Plato, and the tranquillity of the Stoics in the t nexus of things, so now the traditions of the Peripatetics concern- forms or entelechies (which deservedly seemed enigmatical and rcely rightly perceived by the authors themselves) will be referred ntelligible notions, so that we think it necessary rather to explain philosophy thus received by so many ages, so that it may be con- ient (where this is permitted) and to illustrate and then increase with new truths, than to destroy it.

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[1] Gerhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], pp. 234–246. Dutens, *Leibnit. op. om.*, 3, 315–324. First published in the "Acta Eruditor. Lips.," in April, 1695. — Tr.

nd this kind of studies seems to me especially suited both to the elligence (*prudentiæ*) of the teacher and to the profit of the learners,

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[1] For the work referred to, *cf.* Gerhardt, *Leibniz. math. Schrift.*, II., 2 l. 6], pp. 281 *sq.* — Tr.

so that we may not seem more desirous of destroying than of building
nor be tossed between perpetual changes of doctrine, daily uncertai
because of the pride of audacious geniuses, but at length the huma
race, the lust of sects being curbed (which the inane glory of chang
[*novandi*] stimulates), the certain dogmas established, without stumbling, not less in philosophy than in mathematics, will make furthe
advance, since in the writings of distinguished men, ancient and modern (if you take away entirely those things in which they speak to
severely against others), there is wont to be very much that is true an
good, which deserves to be rescued and to be distributed into the public treasury. And would that men preferred to do this rather tha
spend their time in censures by which they only appease their ow
vanity. But somehow very many even hostile views do not displeas
us certainly, whom fortune has so favored in certain new views of our
that friends often bade us think of these only, and each view i
considered according to its own value, although diverse; the reaso
of which perhaps is that in discussing many things we have learne
to despise nothing. But now let us return to our subject.

Active force (which with some you call not ill *power — virtus*) is tw
fold, namely *primitive*, which exists in every corporeal substance *per*
(since I think a wholly quiescent body abhorrent to the nature
things), or *derivative*, which by a limitation as it were of the prim
tive, resulting through the conflicts of bodies with each other, is var
ously exercised. And the primitive force indeed (which is nothin
else than ἐντελέχεια ἡ πρώτη) corresponds to *the substantial soul*
form, but indeed for this reason pertains only to general causes, whic
cannot suffice for the explanation of phenomena. And so we agr
with those who deny that forms must be employed in handing dow
the particular and special causes of sensible things: to point o
which is worth while, lest, while we lead them as it were back agai
to the open fountains of things, at the same time we seem to desi
to return to the 'vain repetitions' (*battologias*) of the vulgar scho
Meanwhile a knowledge of them is necessary to correct philosophi
ing, nor may any one think he is master of the nature of body, unle
he has turned his mind to such things and understood that that cra
notion of corporeal substance is imperfect, not to say false, an
depends upon the imagination alone and was introduced inconside
ately some years since by an abuse of the corpuscular philosophy (
itself excellent and most true), as indeed is evident by this argume
which does not entirely exclude cessation and rest from matter, an
cannot bring forward reasons for the laws controlling the derivati
force of nature. In like manner passive force also is twofold, eith
primitive or derivative. And indeed *the primitive force of enduring*
resisting constitutes that very thing which is called *primary matter*,
you rightly interpret it, in the schools, by which it happens that bo

not penetrated by body, but forms an obstacle to it, and it is enowed at the same time with a certain laziness, so to speak, that is, epugnance to motion, and does not indeed suffer itself to be set in otion unless by the somewhat broken force of the active body. Vhence afterwards *the derivative force of enduring* variously exhibits self in *secondary matter.* But it is our part now to proceed farther, aving removed those general and primitive forces and substituted ose by which we are taught that because of form every body always cts and because of matter every body always endures and resists, nd in this doctrine *of derivative forces and resistances* to investigate ow far bodies prevail by various efforts or again variously resist; for e laws of actions, which are known not only by reason, but are onfirmed also by sense itself through phenomena, are adapted to ese.

Derivative force therefore, by which bodies in action act mutully on each other or mutually suffer from each other, we underand in this place as no other than that which is connected with otion (*i.e.* local), and in turn tends to produce further local otion. For we admit that through local motion other material henomena can be explained. Motion is a continual change of lace, and thus requires time. Yet the movable element (*mobile*) xisting in motion, as it has motion in time, so in any moment hatever has *velocity,* which is so much the greater as more space s run over and less time is expended. Velocity taken in connection ith direction is called *conatus;* but *impetus* is the product of the mass f the body into the velocity, and its quantity is so much that the artesians are wont to call it the quantity of motion, namely, the moentary increment (*momentaneam*), although, speaking more accurately, he quantity of motion itself, existing forsooth in time, arises from the ggregate of the impetuses (equal or unequal) existing in the movble element in the given time multiplied in order into the time. We, evertheless, in discussing with these have followed their fashion of peaking. Nay even as (not inconveniently for the doctrinal use of peaking) we can distinguish the accession which now is made from he accession already made or to be made, as an increment of accession r element; or as we may distinguish the present descent from the escent already made, which it increases; so we can discern and call otion the momentary or instantaneous element of motion diffused by he motion itself through a period of time; and so that which is comonly ascribed to motion is called *the quantity of motion.* And although n the use of terms we are compliant (*faciles*) in accord with an acepted interpretation, nevertheless it especially behooves us to be careul in their use lest we be caught by their ambiguity.

Moreover, as the estimate of motion through a period of time is ade from infinite impulses, so in turn the impulse itself (although a momentary thing) is made from infinite degrees successively in pressed upon that same movable body (*mobile*), and has a certain el ment from which, unfolded, nothing but infinity can arise.

Conceive a tube *A C* (Fig. 4) to revolve with a certain fixed unifor velocity in the horizontal plane of this page about an immovabl centre *C*, and a ball *B*, existing in the cavity c the tube, to be freed from its chain or impedimen and to begin to be moved by the centrifugal force it is manifest that the attempt in the beginnin to depart from the centre by which, namely, th ball in the tube tends towards its extremity *A*, i infinitely small in respect to the impulse which i already has from the rotation, or by which wit the tube itself, the ball *B* tends from the plac *D* towards (*D*), its distance from the centre bein retained. But with the continuance for some tim of the centrifugal impression proceeding from th rotation, from its own progress there must arise i the ball a certain complete centrifugal impulse (*D*)(*B*), comparabl with the impulse of rotation *D*(*D*). Hence it is evident that th *effort* is twofold, elementary to be sure, or infinitely small, which call, also, *solicitation*, and formed by the continuation or repetitio of elementary efforts; that is, the impulse (*impetum*) itself, althoug I do not, for that reason, mean that these mathematical entities ar really so found in nature, but only that they are useful in makin accurate estimates by mental abstraction.

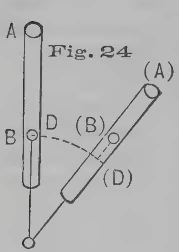

Fig. 4.

Hence *force* also is twofold: the one elementary, which I call als *dead*, because motion (*motus*) does not yet exist in it, but onl a solicitation to motion (*solicitatio ad motum*), such as that of th ball in the tube, or of the stone in the sling, even while it is hel still by the chain; the other, however, is ordinary force, united wit actual motion, which I call *living*. And an example of dead forc indeed is the centrifugal force itself, and likewise the force of gravit or centripetal force, the force also by which the tense elastic bod (*elastrum*) begins to restore itself. But in percussion, which arise from a heavy body falling already for some time, or from a bov restoring itself for some time, or from a similar cause, the forc is living force, which has arisen from an infinite number of con tinued impressions of dead force. And this is what Galileo meant when in his enigmatical manner of speaking he spoke of th infinite force of percussion, namely if compared with the simpl effort of gravity. But although the impulse (*impetus*) is alway united with living force, yet we shall show below that these two ar different.

Living force in any aggregate of bodies again can be known as vofold, namely *total*, or *partial;* and *partial* again is either re- ective or directive, that is, either proper or common to the parts. *espective* (*respectiva*) or *proper* (*propria*) force is that by which the odies comprised in the aggregate can act among themselves mutually; *rective* or *common* force is that by which, besides, this aggregate n act outside itself. But I call it direct, because the total force direction is preserved intact in this partial force. But this alone ould remain, if suddenly the aggregate were imagined to congeal y the intercepted motion of its parts among themselves. Whence om respective and directive taken together *total absolute force* is mposed. But these things will be better understood from the les to be propounded below.

The ancients, as far as known, had a science of dead force one, and this it is which is commonly called Mechanics, treating the lever, block, inclined plane (where belongs the wedge and the iral), the equilibrium of liquids, and similar things, in which they eat in turn only of the first tendency (*conatu*) of the bodies among emselves, before they received an impulse by acting. And although e laws of dead force can in some fashion be transferred to living rce, yet there is need of great caution, as even they may have been ceived, for this reason, who confounded force in general with the antity produced by the multiplication of the mass into the locity, because they understood that force is dead in the regular eory of these. For this thing happens there for a special reason, we already long ago suggested, since (for example), in dif- rent descending weights, in the very beginning of motion at ast the descents themselves or the quantities of the spaces gone rough in the descent, certainly infinitely small or elementary itherto, are proportional to the velocities or to the efforts to descend. ut the progress being made and living force having arisen, the quired velocities are no longer proportional to the spaces already n over in the descent, by which, nevertheless, we have shown rmerly and shall further show, that the force must be estimated, ut only to the elements of these velocities. Galileo began to iscuss concerning living force (although under another name, nay, should rather say, concept) and was the first to explain how by e acceleration of descending weights motion arises. Descartes ghtly distinguished velocity from direction, and saw even in the nflict of bodies that follow by which the former conditions are ast changed. But he did not rightly estimate the least change, hile he changes the direction alone or the velocity alone, since e change moderated by mixing would be obtained from both: ut how this must come about escaped him, because to him, intent that time upon modal manifestations rather than upon realities, henomena so heterogeneous did not seem capable of being compared and modified by union, so that we shall say no more of his oth errors in this doctrine.

Honoratus Fabri,[1] Marcus Marci,[2] Joh. Alph. Borellus,[3] Ignati Baptista Pardies,[4] and Claudius de Chales,[5] and other men very acu in learning have published things not to be despised on motion, b nevertheless have not shunned these capital errors. Huygens,[6] t first that I know who has adorned our age with splendid discoverie seems to me in this argument also to have reached the pure and u adulterated truth and to have freed this doctrine from paralogism

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[1] *Cf. ante*, p. 586, note 2. — Tr.

[2] Johannes Marcus Marci von Kronland, 1595–1667, a German physicia mathematician, and physicist, published his *De proportione motus, seu regu sphygmica ad celeritatem et tarditatem pulsuum, ex illius motu ponderib geometricis librato, absque errore metiendam*, Pragæ, 1639, a remarkal work on the theory of impact, preceding by thirty years the researches Wallis, Wren, and Huygens. This is probably the work to which Leibni here refers. — Tr.

[3] Giovanni Alfonso Borelli, 1608–1679, a distinguished Italian physician a mathematician, the founder of the iatromathematical theory of medicine, w Professor of Mathematics at Pisa and Naples. He was the author of sever medical and mathematical works, among which were *Theorica mediceoru planetarum ex causis physicis deducta*, Florent., 1666; *De motu animaliu* Rome, 1680–1681; *De vi percussionis*, Lugd. Bat., 1686; and *De Motionib naturalibus, a gravitate pendentibus*, Lugd. Bat., 1686. The two latter wor are probably the ones referred to by Leibnitz. For an account of his view *cf.* Lasswitz, *Gesch. d. Atomistik*, Hamburg u. Leipzig, 1890, Vol. 2, pp. 300–3 — Tr.

[4] Ignace Gaston Pardies, 1636–1673, a French Jesuit and geometer, w Professor of Philosophy, and afterwards of Mathematics, at Paris. In h correspondence with Newton, he sought to explain the dispersion of light a diffraction by aid of the assumption that the transmission of light depen upon a wave-movement. He intended to write a great work on Mechanics, which only Pts. 1 and 2, *Discours du mouvement local*, Paris, 1670, and *statique ou la science des forces mouvantes*, Paris, 1673, appeared. His *Œuvr de mathématiques*, etc., 4th ed., appeared à La Haye, 1710. *Cf.* Lasswit *Gesch. d. Atomistik*, 2, 340. Leibnitz refers to Pardies in a communication H. Fabri, *cf.* Gerhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], 81, 84; Gerhard *Leibniz. philos. Schrift.*, 4, 244, 247. — Tr.

[5] Claude François Milliet Deschales, 1621–1678, a French Jesuit and di tinguished mathematician and physicist, published his *Cursus seu mund mathematicus*, 3 tomi, 1st ed., Lugduni, 1674, 2d ed., 1690. Leibnitz refers him briefly in a communication to H. Fabri, Gerhardt, *Leibniz. philos. Schrif* 4, 245; *Leibniz. math. Schrift.*, II., 2 [Vol. 6], 81. Brief account of his viev is given in Lasswitz, *Gesch. d. Atomistik*, 2, 487–490. — Tr.

[6] *Cf. ante*, p. 150, note 3. The doctrine of Huygens, here referred to, is four in his *De motu corporum ex percussione* (1669), which was first published 1703; *Opera reliqua, Amstel.*, 1728, Vol. 2; *Œuvres complètes*, La Haye, 1888 s His correspondence with Leibnitz is found in Gerhardt, *Leibniz. math. Schrift* I., 2 [Vol. 2], 1–208. References to the doctrine of motion occur on pp. 14 184. An account of Huygens' physical and mechanical views is given in Las witz, *Gesch. d. Atomistik*, 2, 341–397. — Tr.

certain rules formerly published. Wren[1] also, Wallis[2] and
ıriotte,[3] men excellent in these studies though diverse in method,
monstrated nearly these same rules. But concerning the causes,
vertheless, opinion is not the same; whence men distinguished in
se studies do not always admit the same conclusions. And indeed
true sources of this science have not yet, as is evident, been dis-
sed. Nor indeed is what seems certain to me admitted by all:
ıt rebounding or reflection springs only from elastic force, that is,
m internal resistance to motion. Nor has any one before us ex-
ined the notion itself of forces, which thing hitherto has disturbed
Cartesians and others, who, even for this reason, could not com-
hend that the sum of the motion or impulse (which they regard
the quantity of the forces) can appear different after the encounter
m before, because for this very reason they believed the quantity
the forces to be changed.

From me, still a youth, and at that time constituting the nature of
dy, with Democritus and his adherents in this matter, Gassendi
d Descartes, in inert mass alone, there escaped a little book
Iypothesis Physica"[4] by title, in which I set forth a theory of
tion, at the same time abstract (*abstractam*) from the system and
ıcrete (*concretam*) for the system,[5] which beyond the merit of its

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[1] Sir Christopher Wren, 1631–1723, best known as the architect of St. Paul's,
ıdon, was distinguished at Oxford for his knowledge of geometry and
lied mathematics. In 1660 he was elected Savilian Professor of Astronomy
Oxford. Newton, in his *Principia*, ed. 1713, p. 19, speaks highly of his
rk as a geometrician. Leibnitz refers to him in the *Hypoth. phys.*, *cf.*
rhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], 26, 29, 30, 75; *Philos. Schrift.*,
87, 190, 191, 236. — Tr.

[2] John Wallis, 1616–1703, an eminent English mathematician, appointed
ilian Professor of Geometry, at Oxford, 1649, published his *Mechanica,*
de Motu Tractatus Geometricus, 3 parts, 1669–1671. His complete works
re published, Oxford, 1695–1699, 3 vols., fol. The correspondence between
bnitz and Wallis is found in Vol. 3 of this ed., and also in Gerhardt, *Leibniz.*
th. Schrift., I., 4 [Vol. 4], 1–82. — Tr.

[3] *Cf. ante*, p. 121, note 4. An elaborate treatise on the percussion of bodies,
la percussion ou choc des corps, probably the one to which Leibnitz here
ers, is found in first volume of his *Œuvres*, Leyden, 1717. — Tr.

[4] *Cf.* Gerhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], 17–80; Gerhardt, *Leib-*
. philos. Schrift., 4, 177–240; Dutens, *Leibnit. op. om.*, 2, Pt. II., 1–48. — Tr.

[5] The compressed and somewhat obscure text is explained by the titles of
essays forming the *Hypothesis Physica nova*. The title of the first essay
Theoria motus concreti seu Hypothesis de rationibus phænomenorum nostri
is; that of the second is: *Theoria motus abstracti seu Rationes motuum*
versales a sensu et phænomenis independentes. *Cf.* Gerhardt's Einleitung,
bniz. philos. Schrift., 4, 9–12, and especially the portion, there quoted, of
tter to Foucher, found also in *op. cit.*, 1, 415; Erdmann, *Leibnit. op. philos.*,
; F. de Careil, *Lettres et Opuscules inédits de Leibniz*, Paris, 1854, 119–120;
tens, *Leibnit. op. om.*, 2, Pt. I., 242; transl. Duncan, *Philos. Wks. of Leibnitz*,
65. — Tr.

mediocrity I see has pleased many distinguished men. I there es
lished, having assumed such a conception of body, the fact that ev
striking body gives its impulse (*conatum*) to the receiving or dire
opposing body as such. For since, in the moment of attack,
receiving body undertakes to go forward and thus run away v
itself, and that impulse (on account of the indifference then belie
by me of the body to motion or rest) must have its effect wholl
the receiving body, unless hindered by a contrary impulse, nay, e
if hindered by it, since it is so necessary that these different impu
should be adjusted among themselves; it was manifest that no ca
could be given why the striking body should not attain the ef
towards which it tends, or why the receiving body should not rec
the entire impulse of the striking body, and so the motion of
receiving body was composed of its own pristine impulse, and of
newly received or foreign impulse. From which then I was show
that if mathematical notions alone, — magnitude, figure, place, —
the change of these, or in the moment itself of impact (*concur*
the impulses to change were perceived in the body, no theory of m
physical notions being held, namely, of power active (*actricis*) in f
and of inactivity (*ignaviæ*), or of resistance to motion in matter,
so if it were necessary for the concourse of events to be determi
by the geometrical composition of impulses alone, as we have
plained: then it must follow that the impulse of the striking b
even the least, is impressed upon the entire receiving body, altho
the greatest, and so the greatest body at rest is dragged away by
striking body, however small, without any retardation of this b
since indeed no repugnance, but rather indifference of it to mot
is contained in such a notion of matter. Whence it would not
any more difficult to impel a large quiescent body than a small
and thus there would be action without reaction, and there could b
estimate of power, since anything whatever could be proved by
thing whatever. And since these things, and many others of
same kind, are opposed to the order of things and conflict with
principles of a true metaphysic, I thought at that time therefore (
indeed truly) that the most wise Author of things in the construct
of the system shunned those things which would follow of themse
from the mere laws of motion derived from pure geometry.

But afterwards, having examined things more deeply, I saw
what the systematic explanation of things consisted, and regar
that former hypothesis of the notion of the body as incomplete,
both by other arguments and also by this itself it was proved tha
body there must be placed something besides magnitude and impe
trability, whence the consideration of forces arises, by adding the n
aphysical laws of which to the laws of extension those very rule
motion are produced which I called systematic; namely, that ev

nge takes place gradually, and every action is accompanied with ction, and new force is not produced without loss of the former, and he one dragging always is retarded by the one dragged, and neither re nor less power is contained in the effect than in the cause. d since this law is not derived from the notion of mass, it must essarily follow from another thing, which is in bodies, namely, m the force itself, which certainly always preserves its own quan- the same, although it is employed by different bodies. Hence refore, besides considerations purely mathematical, and subject to imagination, I have concluded that certain considerations meta- sical, and perceptible by the mind alone, must be admitted, and ertain principle superior to the material mass, and, so to speak, a mal addition, since indeed all the truths of corporeal things can- be concluded from logical and geometrical axioms alone, namely, m great and small, whole and part, figure and position, but some ers must be added from cause and effect, and action and passion, which the reasons of the order of things are saved. Whether we that principle form, or ἐντελέχεια, or force, does not matter, pro- ed we remember that it is intelligibly exhibited through the ion of forces alone.

ut although to-day certain distinguished men, seeing this very ng, that the common notion indeed of matter is not sufficient, h in God ἀπὸ μηχανῆς, and take away all force of acting from ngs, a kind of Mosaic philosophy as it were (as Fludd once called I cannot assent. For although I admit that it has been very rly perceived by them that there is no proper influx of one cre- d substance into another, if the thing is driven to metaphysical ctness, and I confess even freely that all things always proceed m a continuous creation by God; yet I think there is no natural th in things, the reason of which is to be sought immediately in divine action or will, but that always in the things themselves nething has been placed by God, whence all their predicates are lained. It is certainly evident that God has created not only lies, but also souls, to which correspond the primitive entelechies. t these things will be demonstrated elsewhere by their own proper sons more profoundly drawn out.

eanwhile, although I admit an active principle superior to mate- notions and, so to speak, vital everywhere in bodies, yet I do not refore here agree with Henry More and other men, distinguished piety and genius, who so make use of a certain Archæus[1] or hylar- c principle even for the management of phenomena (*ad phænomena curanda*), as if forsooth all things cannot be explained mechani- ly in nature, and as if those who undertake this seem to make way

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[1] *Cf. New Essays, ante*, p. 67, note 3. — Tr.

with incorporeal things, not without suspicion of impiety; or a
with Aristotle it is necessary to imagine intelligences in the revolv
orbs, or the elements must be said to be driven up or down by th
own form, by a short (*compendiosa*) but useless method of teachi
with these, I say, I do not agree, nor has that philosophy pleased
any more than that theology of certain ones, who so believed t
Jupiter thundered or snowed that they even branded the search
after proper causes with the crime of atheism. In my opinion
temperament is the best which satisfies both piety and science,
that we admit that all corporeal phenomena indeed can be sou
from efficient mechanical causes, but we know that the mechani
laws in the universe are derived from higher reasons, and so we m
use of a higher efficient cause only in establishing general and rem
things. But these once established, as often as afterwards we tr
of the near and special efficient causes of natural things, we g
no place to souls or entelechies, no more than to the idle facul
or inexplicable sympathies, since the primal and most univer
efficient cause itself, must not intervene unless as far as the e
are regarded, which the divine wisdom had in so ordering thin
that we neglect no occasion of singing his praise and the most be
tiful hymns.

And in truth final causes (as I have shown by a wholly remarka
example of an optical principle, with the strong approval of the v
celebrated Molyneux in his "Dioptrics") are repeatedly emplo
with large result even in special physics, not only that we may adm
the more the most beautiful works of the supreme Author, but a
that we may sometimes in this way divine what through the way
efficient causes not equally or only hypothetically are manifest. T
far perhaps philosophers have not yet sufficiently observed this u
And it must be maintained in general, that everything in things
be explained in two ways: through *the kingdom of power* or *effic*
causes, and through *the kingdom of wisdom* or through *final cau*
God regulating bodies as machines after the manner of an archit
according to *the laws of magnitude or mathematical laws*, and ind
for the use of souls; but souls, capable of wisdom, as his own fell
citizens and sharers of a certain society with himself, after the man
of a leader, nay of a father rather according to *the laws of good*
or moral laws for his own glory, both kingdoms everywhere in
penetrating, yet unconfused and undisturbed the laws of ea
so that at the same time both in the kingdom of power the gr
est and in the kingdom of wisdom the best is obtained. But
propose in this place to establish the general rules of product
forces, which we can then use in the explanation of special effici
causes.

Next I came to the true, and indeed precisely the same, estim orces, by the most different ways: one indeed *a priori*, from the plest consideration of space, time, and action (which I elsewhere explain), the other *a posteriori*, namely, by estimating the force he effect which it produces in consuming itself. For I under- d here not any *effect*, but that for which force must be expended n which it must be consumed, which you can call, for that reason, *nt*, such as that effect is not, which a heavy body employs in run- through a perfectly horizontal plane, because in such an effect ever produced it always retains the same force, although also in very *effect* rightly treated, so to speak, as *harmless*, we have followed our method of estimating, but now it is laid aside by us. Further ose that effect of the violent effects which is especially capable of ogeneity or division into similar and equal parts, such as exists he ascent of a body possessed of weight: for the elevation of a vy body two or three feet is precisely double or triple the eleva- of the same heavy body one foot; and the elevation of a doubly vy body one foot is precisely double the elevation of a single vy body to the height of one foot; whence the elevation of a bly heavy body three feet is precisely six times the elevation of imple heavy body one foot, supposing namely (at least for the e of teaching, although perhaps in truth the matter is otherwise stituted, but the error here nevertheless is imperceptible), that heavy bodies gravitate equally in the greater or less distance m the horizon. For in an elastic body homogeneity has not with al ease a place. When therefore I wished to compare bodies erent or endowed with different velocities, I easily saw that, if body *A* is single and the body *B* is double, but the velocity of h equal, the force of that one is simple, of this double, since, in rt, whatever is placed in that once is placed in this twice. For in here is a body twice the equal and equivalent of *A* itself, and hing besides. But if the bodies *A* and *C* are equal, but the ocity in *A* is simple and in *C* double, I saw that, not in short what n *A*, is doubled in *C*, since the velocity indeed is doubled, yet not o the body. And I saw that here an error has been made by those o believed that the force itself is doubled by that reduplication of dality (*modalitatis*) alone; as already I once observed and sug- sted, and that the true and not hitherto (although after so many *ements of universal Mathematics* have been written) handed-down *of estimating* consists in this, that finally it attains to something mogeneous; that is, a reduplication accurate and of all kinds, not ly of modes, but also of things. Of which method no other better more remarkable specimen could be given than that which is hibited in this argument itself.

In order, therefore, to obtain these results, I considered whether ese very two bodies *A* and *C*, equal in magnitude but different in

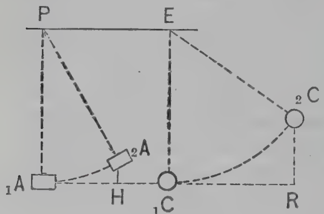

FIG. 5.

velocity, could produce some effects equal to their causes and hom geneous among themselves. For thus those things which by ther selves could not easily be compared, by their effects at least might compared accurately. I assume moreover, that the effect must equal to its cause if it is produce by the expenditure or consumptio of the entire force: in which ca it matters not in how much time is produced. Let us suppose, ther fore, the bodies *A* and *C* (Fig. to be heavy, and to convert the force into an ascent, which will ha pen, if at the moment in which the have their said velocities, *A* simple, *B* double, are known to exist the extremities of the vertical pendulums *PA*, *EC*. But it is evider from the demonstrations of Galileo and others that, the body *A* wit a velocity as 1 at the highest ascending above the horizon *HR* the height of one foot $_2AH$, the body *C* with a velocity as 2 can surel ascend (at the highest) to the height $_2CR$ of four feet. Whence already follows that a heavy body having a velocity as 2 is in powe four times as much as the one having a degree of velocity as 1, since b the expenditure of all its force it can accomplish, in short, four time as much. For raising a pound (that is, itself — *id est se ipsum*) fou feet, in short raises four times one pound one foot. And in th same manner it is inferred generally that the forces of equal bodie are as the squares of the velocities, and thence the forces of bodie in general are in reason composed of the simple of the bodies and th doubles of the velocities.

I have confirmed the same things to absurdity (namely, to per petual motion) by bringing back the contrary opinion, generall received, especially among the Cartesians, according to which force are believed to be in reason composed of bodies and velocities: whic method, indeed, I used repeatedly to define *a posteriori two states unequa in force*, and to distinguish the greater at the same time from the les by a certain mark. And since in substituting the one for the other perpetual mechanical motion or an effect more powerful than th cause does not arise, those states are not in the least equivalent t themselves, but that which was substituted for the other was more powerful because it has caused something greater to be performed But I assume as certain that nature never substitutes things unequa to the forces themselves, but the complete effect is always equal t the full cause; and, in turn, those things which are equal to the forces, with safe reckoning can be substituted by us for them with the freest supposition, as if we made that substitution in act, and thus no fear[1] of perpetual mechanical motion. But if, therefore, it true, as men generally persuade themselves, that a heavy body s 2 (for so now we assume it) endowed with a velocity as 1, and avy body *C* as 1 endowed with a velocity as 2, are equivalent to other, we ought to be able to substitute with impunity the one he other. But this is not true. For let us assume that *A* as 2 acquired a velocity as 1 in the descent ${}_2A_1A$ from the height ${}_2AH$ than a foot; and now in ${}_1A$ itself or in the existing horizon, let ubstitute instead of it the equivalent (as they wish) weight *dus*) *C* as 1 with a velocity as 2, which ascends as far as to *C*, or e height of four feet. And so by the descent alone of the weight two pounds from the height of one foot ${}_2AH$, and having sub- ted its equivalent, we have accomplished the ascent of one pound feet, which is double the former. Therefore we have gained as much force, or we have produced perpetual mechanical mo- , which is certainly absurd. And it does not matter whether by laws of motions we can actually accomplish this substitution; between equivalents indeed substitution can safely be made. ough, indeed, we have thought out various plans by which it be accomplished actually so nearly as we wish, that the entire of the body *A* will be transferred to the body *C*, before at rest, which now (*A* itself being brought to rest) is alone put in motion. nce it will happen, that, instead of a weight of two pounds of a city as 1, would succeed one pound of a velocity as 2, if these equivalent; whence we have shown that an absurdity arises. these things are not indeed worthless, nor do they consist in machies, but are of the greatest use in comparing machines and ions. For if any one has force from water or animals or from r cause, by which a heavy body of a hundred pounds is kept in tant motion, so that within a fourth part of a minute of time n complete a horizontal circle of a diameter of thirty feet; but her maintains that a double weight in its place, in the same , uniformly accomplishes only half the circle with less expendi- , and reckons that to you as if it were a gain; be it known that are deceived and caught by half of the forces. But now having to flight errors, let us set forth a little more distinctly in the nd part of this hastily thrown-off production (*Schediasmatis*) the and truly to be admired laws of nature.[2]

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erhardt reads, "motu," evidently a typographical error. Dutens, *Leibnit.* *m.*, 3, 324, reads, "metu," which the translation follows. — Tr.

utens (*Leibnit. op. om.*, 3, 324) adds: "proponemus, mense Maio exhi- a," *i.e.* to be presented in the month of May. The article, however, never ared in print, but remained in Ms. among Leibnitz's papers, and was first ed by Gerhardt, in his edition of Leibnitz's mathematical writings. A slation of the article is herewith given. — Tr.

ESSAY ON DYNAMICS IN DEFENCE OF THE WONDE FUL LAWS OF NATURE IN RESPECT TO THE FORC OF BODIES, DISCLOSING THEIR MUTUAL ACTIO AND REFERRING THEM TO THEIR CAUSES[1]

[*From the Latin*]

PART II

The nature of body, nay, of substance in general, not being su ciently known, had brought it about (a fact we have already touch upon) that certain distinguished philosophers of our time, since th placed the notion of body in extension alone, were compelled to ha recourse to God in order to explain the union between the soul an the body, nay, also, the communication of bodies with each oth For it must be confessed that it is impossible for a mere extensio involving only geometrical notions, to be capable of action a passion: and so this alone seemed to be left to them, that, when m thinks and undertakes to move his arm, God, as it were, by a primev compact, moves his arm instead of he himself; and on the other han when the motion exists in the blood and spirits,[2] God excites perce tion in the mind. But these very things, since they are foreign to correct method of philosophizing, ought to admonish the authors th they are resting upon a false principle, and that they have not assign rightly the notion of body, from which such things followed. W have shown, therefore, that there is in every substance a force action and, if it is created, of passion also, that the notion of extensi is in itself not complete, but that a relation to something which extended, whose diffusion or continued replication it makes know and so the substance of a body is presupposed, which involves a pow of acting and resisting, and everywhere exists as a corporeal ma and the diffusion of this is involved in extension. Whence one d we shall kindle a new light, also, for the explanation of the union the soul and the body. But now we must show how from then follow wonderful and extremely useful practical theorems, pertaini to Dynamics, that is, the science which teaches the rules especially corporeal forces.

It must be known before all things that force, indeed, is som thing truly real, even in created substances; but space, time, an motion have something of a rational entity, and are true and rea of themselves, but since they involve divine attributes, — im- sity, eternity, operation, or the force of created substances. Hence lready follows that there is no vacuum in space or time; that ion, moreover, separated from force, or where in it only the geo- rical notions, — magnitude, figure, — and the variation of these considered, is in truth nothing else than a change of position, and *notion, as far as (quoad) phenomena are concerned, consists in a mere tion*, which also Descartes acknowledged, when he defined transla- from the neighborhood of one body into the neighborhood of ther. But in deducing his consequences he forgot his definition, determined the rules of motions as if motion was something real absolute. So, therefore, we must consider, if an indefinite num- of bodies are in motion, that from the phenomena it cannot be uced in which of them absolute determinate motion or rest exists, to any one you please taken from these can be attributed rest, vided that the same phenomena come forth. Hence it follows result which Descartes did not notice) that *the uniformity of the otheses is changed neither by the encounters (concursus) of bodies with other;* and besides, that such rules of motions must be assigned t the respective nature of motion may remain intact, nor from the nt after the encounter can it be divined through the phenomena ere before the encounter there had been rest or determinate abso- motion. Whence the rule of Descartes does not at all accord h the facts, by which he asserts that a body at rest can in no way driven from its place by another smaller body, and other things of sort. Than which nothing is more remote from the truth. It ows, also, from the relative nature of motion, that *the action of ies against each other by turns or percussion is the same, provided they roach each other with the same velocity;* that is, the same appearance aining in the given phenomena, whatever at length be the true othesis, or to whichever at length we rightly ascribe motion or , the same event appears in the phenomena sought or resulting, n in respect to the action of bodies among themselves. And this is what we find by experience (*experimur*), that we shall feel the e pain, whether our hand runs against a stone at rest, suspended, ou please, from a thread, or the stone with the same velocity runs inst our hand at rest. Meanwhile, we speak thus, according as thing demands, for a more suitable and simpler explanation of phenomena, precisely as in spherics we employ the motion of the *mum mobile*, and in the theory of the planets we must use the ernican hypothesis, so that already these disputes, urged on with much effort (in which even theologians were implicated), straight- y disappear. For although force is something real and absolute, ertheless motion pertains to the class of relative phenomena, and th is looked for not so much in phenomena as in causes.

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[1] Gerhardt, *Leibniz. math. Schrift.*, II., 2 [Vol. 6], pp. 246–254; aus Manuscript. der Königl. Biblioth. zu Hannover.

[2] *Cf.* Bacon's theory of the *Spiritus*, a brief account of which is given Lasswitz, *Gesch. d. Atomistik*, 1, 431–432. — TR.

From our notions also of body and forces this principle arises, *th* *what happens in substance can be known to happen spontaneously and* *an orderly manner.* With this is connected the principle that *change takes place by a leap.* This posited, it follows also that *aton* *cannot be allowed.* That we may seize th force of this conclusion, let us assum that the bodies *A* and *B* (Fig. 6) mee together and that $_1A$ comes to $_2A$, an again $_1B$ to $_2B$, and thus meeting in $_2A_2$ are reflected from $_2A$ to $_3A$ and fro $_2B$ to $_3B$. But supposing that atom exist, that is, bodies extremely hard and thus inflexible, it is ev dent that the change takes place by a leap or momentary incr ment (*momentaneam*), for direct motion in the moment (*momentc* itself of the encounter becomes retrograde unless we can assume tha immediately after the encounter the bodies rest, that is, lose the force, which thing, besides the fact that it would otherwise be absur would continue again the change by a leap, a momentary incremen (*momentaneam*), namely, from motion t rest, and not however a transition b intermediate steps. And so we mus know, if the bodies *A* and *B* (Fig. 7 meet and come from $_1A_1B$ into the plac of concourse $_2A_2B$, that there they ar gradually compressed like two inflate balls, and more and more approach each other in turn by the con tinually increased pressure; that, moreover, by this thing the motio itself is weakened, the force itself of the effort being carried ove into the elasticities (*elastra*) of the bodies, until at length they ar reduced to rest; but then at length the elasticity of the bodie restoring them, they themselves rebound from each other in tur with a retrograde motion begun again from rest and continuall increasing; at length with the same velocity with which they ap proached each other, regained but turned in the opposite directio they recede in turn from each other and return into the position $_3A_3B$ which coincide with the positions $_1A_1B$, if the bodies are suppose equal and of equal velocity. Thence it is already evident how n change takes place by a leap, but the progress being gradually dimin ished and at length reduced to rest, then at length a regress arise So that as from one figure another is not made (as from a circle a oval) unless through innumerable intermediate figures, nor is ther any passing over from a place to a place or from a time to a tim unless through all intermediate places and times, so not from motio is rest produced, and much less an opposite motion, unless throug all the intermediate degrees of motions. And since this princip

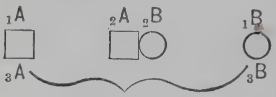

FIG. 6.

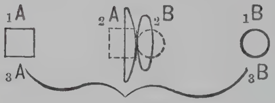

FIG. 7.

so great consequence in nature, I wonder it is so little thought From these considerations follows what Descartes had attacked is letters, and now also certain great men are unwilling to admit, *all reflection arises from elasticity*, and a reason is given of many arkable experiments which indicate that *a body bends before it is elled*, as Mariotte has very beautifully illustrated. Finally, that cially wonderful principle follows from these considerations, that ody is so poor but that it has elasticity, and so is pervaded by id still more subtile; and then that *there are no elements of bodies*, that neither the most fluid matter nor certain solid globules of second element, exact and durable, are to be granted, but that ysis proceeds to infinity.

is consistent .with this *law of continuity*, excluding leap from nge, that a case of rest can be considered as a special case of ion, namely, as an evanescent or very small motion, and a case quality can be considered as a case of evanescent inequality. ence the consequence is, that such laws of motions must be gned that there be no need for peculiar rules for bodies equal at rest, but these rules spring from the rules of bodies unequal moving of themselves, or, if we wish to enounce peculiar rules rest and equality, we must be careful lest we assign such as do agree with the hypothesis which considers rest as the last motion quality as the last inequality, otherwise we shall violate the nony of things and our rules will not agree among themselves. new system of testing our own or others' rules, I published first he "Nouvelles de la République des Lettres," July, 1687, article nd called it a general principle of order (*principium ordinis gen-*), springing from the notion of the infinite and the continuum, ng to it the axiom, that from orderly data the results also are rly (*datis ordinatis etiam quæsita sunt ordinata*). I expressed the ciple universally thus: *If a case approaches a case continually in ata and at length disappears in itself, the results of the cases must approach each other continually in the things sought for, and at length in turn in themselves.* (*Si casus ad casum continue accedat in datis emque in ipsum evanescat, necesse est ut etiam eventus casuum sibi con- accedant in quæsitis tandemque in se invicem desinant.*) Precisely geometry the case of the ellipse approaches continually the case he parabola, in proportion as one focus remaining another more more remote is regarded as assumed, until in the case of another s infinitely removed the ellipse passes into the parabola. Whence he rules of the ellipse must be verified in the parabola (taken as llipse whose other focus is infinitely distant). Whence the radii ng parallel into a parabola can be conceived as coming from

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Cf. Gerhardt, *Leibniz. philos. Schrift.*, 3, 51–55; Erdmann, 104–106.—Tr.

another focus or tending towards it. Since, therefore, in the s
way a case in which the body A runs against B in motion can
varied continually, so that the motion of A itself remaining,
motion of B itself is regarded as less and less, until at length
regarded as disappearing in rest and thence again grows in the c
trary direction; I say the result of the attack, but rebounding i
what whether in A itself or in B itself, continually approaches
both motions the result of the attack which exists in the case of
rest, and in it finally ceases; and thus the case of rest both in
data (*in datis*) and in the result or that which is sought (*quæsitis*
the limit of the cases of motion in a straight line, or the comm
limit of direct and continuous motion, and thus as it were a spe
example of either. With regard to this touchstone (*lydium lapide*
brought over by me from geometry to physics, when I examined
Cartesian rules of motions, it happened, wonderful to say, that a
tain hiatus or leap showed itself utterly abhorrent to the nature
things, for in expressing quantities by lines, and taking for absci
(*pro abscissis*) the motions of B itself before the encounter, the d
and for ordinates (*pro ordinatim applicatis*) the motion of the sa
after the encounter, the results sought for, and by drawing the
through the extremities of the ordinates (*ordinatarum*), accordin
the precept of the rules of Descartes, this line was not a continu
but something wonderfully gaping and leaping in a certain abs
and unthinkable manner. And when on that occasion I observed
that the rules of Rev. Father Malebranche did not bear this exami
tion in all things, the distinguished man having considered the ma
again according to his candor, declared publicly that from this
occasion had arisen for him to change his rules, for which rea
also, he published a brief pamphlet. Although it must be confes
that because he had not yet directed his attention sufficiently to
use of this new system, he has left something now also not yet s
ciently in all things complete (*quadrant*).

From what has been said, this wonderful principle also follo
that the passion of every body is spontaneous, or arises from internal fo
although upon external occasion. I understand here, however, pass
proper, which arises from percussion, or which remains the sa
whatever hypothesis at length is assigned, or to whatever at len
we ascribe absolute rest or motion. For since the percussion is
same, to whatever at length true motion corresponds, it follows t
the result of the percussion is distributed equally between both,
thus *both act equally in the encounter*, and thus half the result ar
from the action of the one, the other half from the action of the ot
and since half, also, of the result or passion is in one, half in the oth
it is sufficient that we derive the passion which is in one from
action also which is in itself, and we need no influence of the one u

other, although by the action of one an occasion is furnished the
er for producing a change in itself. Certainly, while A and B
et, the resistance of the bodies, united with their elasticity, causes
m to be compressed because of the percussion, and the compression
qual in each and according to whatever hypothesis, as the experi-
nts show also, if any one conceives two inflated balls to meet, whether
h are in motion, or each is at rest, even if the one at rest be sus-
ded from some thread, in order that it may most easily recede;
, always provided the velocity of approach or the respective velocity
the same, the compression, or the intensity of the elasticity, will be
same and equal in both. Then the balls A and B, restoring them-
ves by the force of their own violent, namely, compressed and con-
ed, elasticity, mutually repel each other by turns, and spread out,
it were, in an arc, and, with a force equal on both sides, each is
ven back by the other, and so, not by the force of the other, but by
own force, it recedes from that one. But what is to be understood
the case of inflated balls is to be understood in the case of every
ly so far as it is passive in percussion, namely, that the rebounding
l leaping apart arises from the elasticity in itself, that is, from the
tion of the permeating etherial fluid matter, and thus from force
ernal, or proceeding from within. I understand, however, as I have
d, that the *proper motion* of bodies is separated from the *common*,
ich can be ascribed to the centre of gravity; whence their proper
tion is so to be conceived (to be conceived, I say, by the way of
pothesis) as if they were produced on board a ship, which would
ve the motion of their common centre of gravity, but they them-
ves on board ship were so moved that from the composite common
tion of the ship or centre, and their own proper motion, the
enomena are preserved. From what has been said, also, it is under-
od that *the action of bodies is never without reaction, and both are equal*
each other, and directly contrary.

Since, then, only force, and thence nascent effort exists in any mo-
nt (for motion never truly exists, as we have explained above),
d every effort tends in a straight line, it follows that *all motion is*
tilinear, or composed of rectilinears. Hence, already it not only fol-
vs that *those bodies which move in a curved line, try always to proceed*
the straight line tangent to it, but also, what any one least expects,
nce arises *the true notion of stability* (*firmitatis*). For, if we suppose
at some one of those bodies which we call stable (although in truth
thing is absolutely stable or fluid, but everything has a certain degree
stability or fluidity, by us, however, it is named from a predominant
gard for our senses) circulates about its own centre, the parts will
empt to fly away by the tangent, nay, they will really begin to fly
ay; but since this separation of themselves from each other in turn
sturbs the motion of the encircling body, hence they are repelled, or

again crowded together towards themselves in turn, as if there w
in the centre, a magnetic force of attraction, or as if there were in
parts themselves a centripetal force, and therefore the revolution
arise from the composition of the effort (*nisu*) to recede from
rectilinear by the tangent and the centripetal effort (*conatu*). A
thus it remains that all curvilinear motion arises from the composit
among themselves of rectilinear efforts, and at the same time it
understood that this crowding together by the encircling body is
cause of all stability. Otherwise it could not be that all curvilin
motion was composed of nothing but rectilinear motions. When
also, again, we have a new and not less than before unexpected ar
ment against atoms. Moreover, nothing could be devised more inc
sistent with things than that stability be sought from rest, for *t*
rest never exists in bodies, nor from rest can anything arise but re
but although *A* and *B* are mutually at rest with themselves, if not
fact, at least relatively (although this never occurs exactly, for *no bo*
preserves exactly the same distance from another, however small the tim
and although whatever is once at rest will always be at rest unless
new cause is added, nevertheless it does not follow, for this reaso
that because *B* resists the impelling body, it resists, also, the o
separating it from another, so that certainly, as the resistance of
itself is overcome, or *B* itself driven forward, at the same time
follows. But were the *attraction*, which is not given in nature, b
from the primitive stability (*firmitate*), explained through rest
something similar, it would assuredly follow. And so stability, als
should not be explained unless by the crowding together produced b
the encircling body. For pressure alone does not sufficiently expla
the matter, as if the separation of *B* itself from *A* itself only is im
peded, but it is to be understood that in fact they separate from eac
other in turn, that moreover one is again impelled to the other by th
encircling body, and thus, from the composition of the two motion
this conservation of the conjunction is produced. And so those wh
conceive in bodies certain tablets or insensible layers (for example, o
two polished marbles, which are exactly applied to each other), whos
separation is made difficult on account of the resistance of the ambien
body, and hence explain the stability of two sensible bodies, althoug
very often they speak truly, yet when they suppose some stability i
the layers again, they do not give the last reason for stability. From
these considerations, also, it can be understood why I cannot in thi
thing continue (*stare*) in certain philosophic opinions of certain grea
mathematicians, who, besides the fact that they admit vacant spac
and seem not to shrink back from attraction, consider motion, also
as an absolute thing, and hasten to prove it from the revolution an
the centrifugal force which has thence arisen. But since the revolu
tion also arises only from the composition of rectilinear motions, i

lows, if the equivalent of the hypotheses is sound in rectilinear otions, however assumed, that it will be sound in the curvilinears. From what has been said it can also be understood that *the common otion in many bodies does not change their actions among themselves*, since e velocity with which they approach each other in turn, and thus e force of the encounter by which they act on each other in turn, not changed. Whence the remarkable experiments follow which ssendi mentions in his letters on motion impressed by a transrred motor, that he might satisfy those who seemed to themselves be able to infer the rest of the earth's sphere from the motion projectiles. Nevertheless, it is certain that, if any [persons] are rne in a large ship (closed, if agreeable, or certainly so constituted at the external phenomena cannot be observed by the travellers), d if the ship is moved, although with great velocity, yet quietly or iformly, they themselves will have no principle by which to disguish (from those things, namely, which take place on shipboard) hether the ship is at rest or moves, even if by chance they play ball the ship, or practice other movements. And this fact must be oted in favor of those whose belief accords with the not rightly nderstood notion of the Copernicans, that according to these, things ojected from the earth into the air are carried off (*abripi*) by the r with the gyrating earth, and thus the motion of the bottom folws, and fall back upon the earth just as if this were at rest; a view hich is properly judged insufficient, since the very learned men who ake use of the Copernican hypothesis conceive, rather, that someing on the surface of the earth is moved with the earth, and, just if discharged from a bow or hurling machine (*tormento*), carries ith itself the impetus made by the gyration of the earth, together ith the impetus made by the projection. Thence, when their double otion is the one common with the earth, the other peculiar to the rojection, it is no wonder that the common motion changes nothing. leanwhile, it is not to be disguised that, if the projectiles could be riven so far, or if the ship were conceived so large, and borne with ich velocity, that before the descent the heavy earth or ship described n arc perceptibly different from a straight line; a distinction would e discovered, because then, indeed, the motion of the earth or ship because circular) does not remain common to the motion which was npressed upon the missile by the gyration of the ship or earth because rectilinear). And in the effort of heavy bodies towards the entre, external action is added, which can no less produce a diversity f phenomena, than if the compass were kept closed on the ship, which ould certainly indicate a variation of the ship. As often, however, s the question concerns the equivalence of hypotheses, all things must e united which concur in the phenomena. From these consideraions, also, it is understood that any composition of motions or resolution, whatever, of one motion into two or more can safely employed, concerning which, nevertheless, a certain very clever m in the works of Wallis had hesitated, not without reason. For t matter certainly deserves proof, and cannot (as is done by many) assumed as in itself known.

VI

ON THE RADICAL ORIGIN OF THINGS[1]

November 23, 1697

[*From the Latin*]

Besides the world or the aggregate of finite things, there is Unique Being who rules, not only as the mind in me, or rather as in my body rule myself, but also in a much higher manner. F this unique sovereign of the universe not only rules the world, b also frames or fashions it, and is superior to the world and, so speak, outside the world (*extramundanum*), and thus is the ultima reason of things. For the sufficient reason of existence can be foun neither in any single thing, nor in the entire aggregate and seri of things. Let us suppose that there was an eternal book of th Elements of Geometry, one copy always made from another, it evident that, although we can account for the present book by th past, whence it has been copied, nevertheless we never, by assumin in the past as many books as we please, come to the complete reaso for we may always wonder why, from all time, such books hav existed; that is to say, why these books were written, and why s written. What is true of books is likewise true of the different state of the world, for the following state has in a measure been copie from the preceding (although according to certain laws of change) and so to whatever extent you go back into anterior states, you wil never find in these states the full reason; that is to say, why an world exists rather than none, and why such an one.

Therefore, although you imagine the world to be eternal, since nevertheless, you assume only a succession of states, and do not fin in any one of these whatever the sufficient reason, nay more, since b assuming any number you please you do not advance even the leas towards accounting for them, it is evident that the reason must b sought elsewhere. For in eternal things we must understand that n if there were no cause, yet there is a reason, which in persisting ngs is the necessity itself or the essence; but in a series of chang- things, if we suppose that this series proceeds from a prior series rnally, the reason would be the prevalence of inclinations, as we ll soon see, in which, that is to say, the reasons do not necessitate ith an absolute or metaphysical necessity so as to imply the con- ry), but incline. From these considerations it is evident that we nnot escape the ultimate extramundane reason of things or God assuming the eternity of the world.

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[1] Gerhardt, *Leibniz. philos. Schrift.*, 7, 302–308; Erdmann, 147–150; Janet 2, 546–553 (in French). — Tr.

The reasons therefore of the world lie concealed in something side the world, different from the chain of circumstances or series things, whose aggregate constitutes the world. We must then ne from physical or hypothetical necessity, which determines the sterior states of the world from the prior states, to something which of absolute or metaphysical necessity, the reason for which cannot given. For the present world is physically or hypothetically but t absolutely or metaphysically necessary. In fact, having assumed at it is what it is, it follows that henceforth things must be what ey are. Since, therefore, the ultimate root must be in something ich is metaphysically necessary, and since there is no reason of e existing unless from the existing, it is therefore necessary that unique being exist of metaphysical necessity, or whose essence is istence, and that thus something exists different from the plurality beings or the world, which we have admitted and shown not to of metaphysical necessity.

But that we may explain a little more distinctly how temporal, ntingent or physical truths originate in eternal, or essential or etaphysical truths, we must first know, that, by the very fact itself at something rather than nothing exists, there is some demand r existence in possible things or in possibility itself or essence, or o to speak) a stretching forth to existence, and, to sum it up in word, that essence *per se* tends to existence. Whence it hereafter llows, that all possible things, or those expressing essence or pos- ble reality, with equal right tend to essence (*essentiam*[1]) in pro- rtion to the quantity of essence or reality, or in proportion to the gree of perfection which they involve; for perfection is nothing se than quantity of essence.

But from this we see most clearly that from the infinite combina- ons of possible things and possible series there stands forth one rough which the greatest quantity of essence or possibility is ought through to existence. There is always, in fact, in things a

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[1] The reading according to both Gerhardt and Erdmann. Janet's French rsion reads: "l'existence." The argument would seem to require the read- g "existentiam." — TR.

principle of determination which is to be sought from the maxim
or minimum, so that beyond question the greatest effect is manifest
with, so to speak, the least expense. And here time, place, or, i
word, the receptivity or capacity of the world can be considered
the expense or ground upon which, as conveniently as possible,
must be built, while the varieties of the forms correspond to t
proportion of the building and the number and elegance of t
rooms. And it is as in certain games when all the places at a ta
must be filled according to certain laws, where, unless you empl
a certain skill, hindered finally by the unfavorable places, you w
be compelled to leave vacant more places than you were able
desired to do. There is, however, a certain method by which t
greatest possible space is most easily filled. If therefore, for instan
we assume that it has been decreed that there be a triangle, thou
with no other accidentally determining condition, the result is
equilateral triangle; and if it is assumed that we must proceed fr
point to point, though nothing determines the road beyond, t
easiest and the shortest way will be chosen; thus having once assum
that being prevails over non-being, or that there is a reason w
something rather than nothing existed, or that from possibility
transition must be made to act, it follows hence, in the absence
any further determination, that the quantity of existence is as gre
as possible in proportion to the capacity of the time and place (
the order of possible existence), just as tiles are so laid that in t
proposed area as many as possible may be contained.

From these considerations we understand already in a wonderf
way how, in the very original formation of things, a certain Divi
Mathematics or Metaphysical Mechanics is employed, and the det
mination of the greatest amount of existence has place. Thus t
right angle is the determinate of all the angles in Geometry, a
liquids placed in different media arrange themselves in the m
capacious form, namely, the spherical; but especially in gene
Mechanics itself, when many heavy bodies struggle with each oth
such a motion at length arises, through which the greatest desce
on the whole is accomplished. For if all possibilities with eq
right tend to existence according to the measure of reality, so
weights by equal right tend to descend in proportion to the measu
of gravity, and as here the motion appears, in which is contain
the greatest possible descent of the heavy bodies, so there the wor
appears, through which is realized the greatest possible producti
of possibilities.

And so also we already have physical necessity from metaphysic
for although the world is not metaphysically necessary, so that t
contrary implies contradiction or logical absurdity, it is neverthele
physically necessary or determined so that the contrary impli

perfection or moral absurdity. And as possibility is the source
essence, so perfection or the degree of essence (through which
e greatest number of things are compossible) is the source of exist-
ce. Whence it is at the same time evident how freedom exists in
e Author of the world, although he does all things determinately
cause he acts from the principle of wisdom or perfection. Indif-
rence certainly arises from ignorance, and the greater one's wisdom
e more he is determined to the most perfect.

But (you will say) this comparison of a certain determining meta-
ysical mechanism with the physical one of heavy bodies, although
seems elegant, nevertheless is wanting in this because the struggling
avy bodies truly exist, but the possibilities or essences before or
sides existence are imaginary or fictitious, therefore no reason of
istence can be sought in them. I reply that neither these essences
r the eternal truths which they call from them are fictitious, but
ist in a certain so to speak region of ideas, namely in God himself,
e source of every essence and of the existence of the rest. That
do not seem to have spoken gratuitously, the existence itself of
actual series of things indicates. For since reason is not found
this series, as we showed above, but must be sought in meta-
ysical necessities or eternal truths; moreover, since existences
nnot exist unless from existences, as already we maintained above,
rnal truths must have existence in a certain absolute or meta-
ysically necessary subject, that is in God, through whom these
ings, which otherwise would be imaginary, are (to speak barbar-
sly but significantly) realized.

And in truth actually in the world we observe that all things take
ace according to the laws of the eternal verities not only geomet-
al but also metaphysical, that is, not only according to material
cessities, but also according to formal reasons; and that is true
t only generally in that reason of the existing rather than non-
isting, and the so rather than otherwise existing world which we
ve now explained (which certainly is to be sought from the tend-
cy of possibilities to existence), but also by descending to specials
see, by a wonderful plan in all nature, the metaphysical laws of
use, power, action, have place, and these prevail over the purely
ometrical laws themselves of matter, as in giving the reasons of
laws of motion I have observed to such an extent that I was
ally compelled to abandon, as elsewhere I have more at length ex-
ined, the law of the geometrical composition of impulses (*conatuum*),
fended formerly by me, a youth, when I was more materialistic.

Thus, therefore, we have the ultimate reason of reality both of
sences and of existences in one, which assuredly greater, above and
fore the world itself is necessarily existent, since through itself
t only existences, which the world embraces, but also possibilities,

have reality. But this can be sought only in one source on accou of the connection of all things with each other. It is evident, mo over, that from this source existing things continually spring for (*promanare*) and are produced and the products exist, since it is n apparent why one state of the world rather than another, yesterd rather than to-day, flows from itself. It is also evident how God ac not only physically but also freely, and is in himself not only t efficient but also the final cause of things, and how an account taken by him, not only of grandeur and power in the mechanism the universe already constituted, but also of goodness and wisdo in that to be constituted.

And lest any one may think that moral perfection or goodness here confounded with metaphysical perfection or magnitude, and th latter being granted may deny the former, it is to be understood th it follows from what has been said, not only that the world is th most perfect physically, or, if you prefer, metaphysically, or th that series of things has been produced in which the greatest po sible reality is actually manifest, but also that it is the most perfe morally, because in reality moral perfection in souls themselves physical. Whence the world is not only an especially admirab mechanism, but also, as far as it is composed of souls, is the bes Republic, through which there is brought to souls the greatest po sible felicity or joy in which their physical perfection consists.

But, you will say, we experience the contrary in the world, for th best very often fare the worst, the innocent, not only beasts, but als men, are struck down, and even killed with torture; finally, the worl especially if the government of the human race be regarded, seem rather a certain confused chaos than a thing arranged by a certai supreme wisdom. So at first view I confess it seems, but the contrar must be established by a more thorough inspection; *a priori*, it i evident from these very considerations which have been brought for ward, that the highest possible perfection, namely, of all things, an so also of mind, is obtained.

And in truth it is unjust to judge, unless after an investigation o the whole law, as the jurisconsults say. We know a small part of th eternity extending into immensity; for how little is the memory of few thousands of years which history recounts for us. And yet, fro so small experience we judge rashly concerning the immense and th eternal, as men in a prison, or, if you prefer, born and educated i the subterranean salt-pits of the Sarmatians, thought that there is n other light in the world but that dim lamp light scarcely sufficien to direct their steps. We look at a very beautiful picture, we cove this entirely, reserving a small portion; what else in this will appear even if you look very attentively, nay, how much more will you observ from near by than a certain confused congeries of colors withou oice, without art; and nevertheless, when the whole covering is moved, and you shall see the whole picture in the proper position, u will know that that which seemed thoughtlessly spread upon the nvas has been done with the highest art by the author of the work. hat the eyes observe in pictures, the ears perceive in music. Eminent mposers very often mix discords with concords in order to arouse, nd, as it were, sting the hearer, and as more solicitous concerning e outcome, all having soon been restored to order, that he may joice so much the more, in short, that we may take pleasure in tty dangers or experiences of evils by the sense itself, or by the splay of either our power or happiness; or, as we delight in the ectacle of the rope-dancers, or in the sword-dance (*saltatione inter adios — sauts perilleux*, Leibnitz), things that themselves excite terror, nd we, our very selves, half let down the children in sport, as it ere, now almost about to throw them before us, just as the ape ore Christian, king of Denmark, when an infant, and wrapped in vaddling clothes, to the roof of the house, and while all were anxious, ke one in sport bore him safe back again into his cradle. In accord ith the same principle, it is insipid always to eat sweet things; harp, sour, nay more, bitter things which excite the taste, are to be nixed with them. He who has not tasted the bitter, has not deserved, ay more, will not appreciate the sweet. This itself is the law of joy, hat pleasure does not proceed uninterruptedly; for this produces isgust, and makes us inert, not joyful.

But what we have said of this part which can be disturbed while he harmony on the whole is preserved is not so to be interpreted as f no account is taken of the parts, or as if it would suffice that the whole world be complete in its own parts, although it can happen hat the human race is wretched, and that there is no care for justice n the universe, or account taken of us, as some think, who judge not ightly enough concerning the totality of things. For we must know hat, as in the best constituted republic, care is taken that it be as vell as possible with individuals, so the universe would not be suffiiently perfect unless, while the harmony of the universe is preserved, s much regard is had for particular interests. Of which thing no etter measure could be constituted than the law itself of justice, aying that each should take part in the perfection of the universe, nd in happiness proper in proportion to the measure of his own irtue and of that will which is a disposition of mind (*affectus*) toward[1] he common good, by which that itself is completed which we call the ffection and love of God, in which alone the force and also the power f the Christian religion consists, in the judgment even of the wise heologians. Nor should it seem wonderful that so much is conferred

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[1] Gerhardt reads, incorrectly, "ergo"; Erdmann, correctly, "erga" — Tr.

upon souls in the universe, since they very closely reproduce the imag
of the supreme author, and are related to him not only as machines
the maker (like the rest), but also as citizens to the prince, and w
continue in existence equally with the universe itself, and express a
concentrate in a measure the whole in themselves, so that it can
said that souls are the entire parts.

But as regards the sufferings especially of good men, it must ce
tainly be maintained that they result in their greater good, and th
is true not only theologically, but also physically, as the grain ca
into the earth suffers before it bears fruit. And on the whole, it ca
be said that sufferings, temporarily evil, are in effect good, since the
are the short roads to greater perfection. So, in physics, those liquo
which ferment slowly are improved more slowly, but those in whic
the fermentation is stronger are improved more readily, the par
being thrown off with greater force. And this is, as you would sa
to go back, in order, by a greater effort, to leap forwards (*qu'on recu*
pour mieux sauter, — you go back to take a better leap). These view
therefore, must be maintained to be not only pleasing and comfortin
but also most true. And in general, I think there is nothing, bot
truer than happiness, and more propitious and more delightful tha
truth.

Respecting the increase also of the beauty and general perfectio
of the divine works, a certain perpetual and very free progress of th
whole universe is to be recognized, so that it proceeds to ever greate
culture. As for instance, a great part of our earth receives cultur
and will receive more and more. And although it is true that some
times some parts grow wild again or are destroyed and depreciated
yet this must so be understood, as a little before we interpreted suf
fering, namely, that this destruction and depreciation itself is usefu
in the attainment of something greater, so that in some measure w
gain by the very loss.

And as to the objection which might be made that thus the worl
should long ago have been made a paradise, the reply is at hand
although already many substances have attained great perfection
nevertheless, on account of the divisibility of the continuum to infinity,
there always remain in the abyss of things parts hitherto asleep, to be
aroused and carried forwards to something greater and better, and, in
a word, to a better culture. And accordingly, progress never comes
to an end.

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[1] Both Gerhardt and Erdmann read, "imagine"; manifestly a typographical error for "imaginem." — Tr.

VII

APPENDIX[1]

May, 1702

[*From the Latin*]

Up to the present time, I have published no book, indeed, against Cartesian philosophy, but often in the "Acta Eruditorum Lipsien-m" and the "Journaux" of France and Holland hastily-thrown-off oductions (*Schediasmata*) will be found inserted by me, in which I ve borne witness to my dissent from it. But first (not to speak w of the others), about the nature of the body and what motive ces are in the body; in all others my opinion was the same. The rtesians, it is true, place the essence of body in extension alone, but although with Aristotle and Descartes against Democritus and Gas-ndi I admit no vacuum, and against Aristotle with Democritus and scartes think there is nothing but an apparent rarefaction and con-nsation, yet I think with Democritus and Aristotle against Des-rtes, that there is something passive in body besides extension, that, mely, by which body resists penetration; but besides this, I also cognize with Plato and Aristotle against Democritus and Descartes active force or ἐντελέχεια, so that I think Aristotle so far rightly fined nature as the source (*principium*) of motion and rest, not cause I think any body, unless already in motion, can be moved by elf or be put in motion by any quality such as gravity, but because hink every body always has implanted in it motive force (*motricem*), y, rather motion actually intrinsic (*motum intrinscum actualem*), from e very beginning of things. Moreover, I agree with Democritus and escartes against the multitude of the Scholastics, that the exercise of e motive (*motricis*) power and the phenomena of bodies can always explained mechanically, the causes themselves of the laws of motion ing withdrawn which spring from a higher source, namely, from the telechy, which cannot be derived from the passive mass alone and modifications.

But in order that my opinion may be better understood and its asons also may be somewhat apparent, I think, in the first place, at the nature of body does not consist in extension alone, because evolving the notion of extension we must notice that it is relative something that is extended and signifies a diffusion or repetition of a certain nature. For every repetition (or multitude of the sam things) is either discrete, as in numbers where aggregate parts a discerned; or is continuous, where the parts are indeterminate an can be assumed in infinite ways. *Continua*, however, are of two kinds the one successive, as time and motion, the other simultaneous consisting of coexisting parts, as space and body. And as in tim we conceive nothing else than the disposition or series itself of variations, which can occur in itself, so in space we perceive nothin else than the possible disposition of bodies. And so when space said to be extended, we accept the statement in the same sense a when time is said to endure or number to be numbered; for, i truth, time adds nothing to duration nor space to extension, but a successive variations are in time, in body those things are divers which can be diffused. For, because extension is a simultaneou continuous repetition as duration is a successive one, as often as th same nature is diffused at the same time through many things, a ductility or specific gravity or the yellow-color in gold or the whit color in milk, extension is said to have place generally in body a resistance or impenetrability, although it must be confessed that tha diffusion continuous in color, weight, ductility, and things similar i kind but homogeneous, is only apparent and has no place in part however small, and so the extension of resistance alone which i diffused through matter preserves this name with the strict invest gator. But it is evident from these considerations, that extension i not an absolute predicate, but relative to that which is extended o diffused, and from the nature of which, diffusion can just as little b separated as number from the thing numbered. And hence thos who assumed extension as an absolute primitive attribute, indefinabl and ἄρρητον, erred by defect of analysis and took refuge in th occult qualities which for the rest they so despised, as if extensio were something that cannot be explained.

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[1] Gerhardt, *Leibniz. math. Schrift.*, II, 2 [Vol. 6], 98–106; Gerhardt, *Leibniz. ilos. Schrift.*, 4, 393–400; *cf.* G.'s *Einleitung*, *ibid.*, 271–272. The letter to onoratus Fabri, and this Appendix, were printed by Gerhardt from the Ms. the Royal Library at Hanover.

The question now is asked, What is that nature whose diffusio constitutes body? We have already said that matter is constitute by the diffusion of resistance; but since in our opinion there is something else in body besides matter, the question is asked in what it nature consists. We say, therefore, it can consist in nothing els than ἐν τῷ δυναμικῷ or the indwelling principle of change and persistence. Whence also it uses the physical doctrine of the two mathematical sciences to whose principles it was subordinated, geometry and dynamics, the elements of which latter science not yet sufficientl propounded, I have elsewhere promised. Moreover, geometry itself or the science of extension, again is subordinated to arithmetic, because in extension, as I said above, there is repetition or multitude and dynamics is subordinated to metaphysic which treats of cause and effect.

Again, τὸ δυναμικόν or power in body is twofold, — passive and active. ssive power properly constitutes matter or mass, active ἐντελέχεια form. Passive power is the resistance itself by which body resists t only penetration but also motion, and by which it happens that other body cannot enter into its place unless itself yields, but elf does not yield unless by retarding somewhat the motion of the pelling body, and so it attempts to continue steadfastly in its mer state, not merely that it may not depart thence voluntarily, t also that it may resist change. And so there are therein two sistances or masses: the first antitypy, as they call it, or impenetra- ity; the second resistance, or what Kepler calls the natural inertia bodies, which Descartes also somewhere in his letters acknowledged, m the fact that bodies certainly receive no new motion unless by rce, and so resist the impression and break its force. This would t happen if there were not in the body, besides extension, τὸ δυνα- κόν or the principle of the laws of motion, by which it happens that e quantity of forces cannot be increased, nor can a body even be pelled by another unless its own force is broken. This passive force the body, moreover, is everywhere the same and proportional to magnitude. For although some bodies appear more dense than hers, this nevertheless happens because their pores are more filled th matter pertaining to the body, while, on the contrary, the rarer dies have the nature of a sponge, so that another more subtile atter glides through their pores which is not reckoned with the dy nor its motion followed or looked for.

Active force, which also absolutely is customarily called force, is t to be conceived as a simple common power of the schools, or as a ceptivity of action, but involves a conatus or tendency to action, so at, unless something else hinders, action follows. And in this operly consists ἐντελέχεια, too little understood by the schools; for ch a power involves act (*actum*), and does not persist in a naked culty, although it does not always proceed wholly to the action *ctionem*) to which it tends, as often, namely, as an impediment is rown in its way. Again active force is twofold, — primitive and deri- tive; that is, either substantial or accidental. Primitive active force, hich is called by Aristotle ἐντελέχεια ἡ πρώτη, generally the form of bstance (*forma substantiæ*), is another natural principle which with aterial or passive power completes the corporeal substance, which is, rsooth, *a unum per se*, not a mere aggregate of many substances; for ere is much difference, for example, between an animal and a flock. nd so this entelechy or soul, or something analogous to the soul, ists, and always naturally actuates some organic body, which itself parately assumed (*quod ipsum separatim sumtum*), when the soul is parated forsooth or removed, is not one substance, but an aggregate many; in a word, a natural machine.

This natural machine, moreover, has this highest prerogative compared with an artificial, that exhibiting a proof of a divine autho it consists of infinite organs wrapped up in itself, and so can never b utterly destroyed, just as it cannot be absolutely produced, but ca be diminished only and increased, and be involved and evolved, th being to a certain extent itself a substance, and in it (however tran formed) a certain degree of vitality, or, if you prefer, of primiti activity being always preserved. For what is said of animate thing must also be said proportionally of those which are not properly an mals. Meanwhile, it must be maintained that intelligences, or th more noble souls which are also called spirits, are ruled by God no only as machines, but also as subjects, and are not liable to thos changes to which other living beings are exposed.

Derivative force is that which some call impetus, a conatus evidentl or tendency, so to speak, to a certain determinate motion, by whic accordingly primitive force or the principle of action is modified. have shown that this is not preserved the same in the same body, bu yet, however distributed in many, it remains the same in the amoun and differs from motion itself, whose quantity is not preserved. An this itself also is the impression which a body receives by impulse, b whose aid projectiles continue their motion and do not need any ne impulse, which Gassendi also has illustrated by elegant experiment made on shipboard. Thus also some incorrectly think that projectile have their motion continued by the air. Further, derivative forc differs from action only as the instantaneous from the successive; fo there is already force in the first instant, but action requires a perio of time, and so is brought to pass by the prolongation of forces i time, which is perceived in any part of the body whatever. And s action is in reason composed of body, time, and force (*vis*) or energ (*virtutis*), since by the Cartesians the quantity of motion is estimate by the calculation of velocity in the body, and forces are considere far otherwise than as velocities, as will soon be stated.

To place active force in bodies moreover, many things compel us and especially the experience itself, which shows that motions are in matter, although these motions must be attributed originally to th general cause of things,—God; immediately, however, and specifically they must be attributed to the force placed in things by God. For to say that God in creation has given to bodies a law of action, is nothin unless he has given at the same time something by which the law is observed; otherwise he himself will be obliged always to procure in an extraordinary manner the observance of the law. Yea, rather his law is efficacious, and makes bodies efficient; *i.e.* he gave to them natural (*insitam*) force. Further, we must consider that derived force and action is a certain mode (*modale*), since it admits change. But every mode is constituted by some modification of something persist or more absolute. And just as figure is a certain limitation or odification of passive force or extended mass, so derivative force and oving action (*actio motrix*) is a certain modification not certainly of hing merely passive (otherwise a modification or limit would involve ore reality than the thing itself which is limited), but of something ive, that is, of the primitive entelechy. Therefore, derivative and idental or changeable force will be a certain modification of the imitive energy (*virtutis*) essential to and abiding in every corporeal bstance. Whence the Cartesians, since they acknowledge no active inciple substantial and capable of modification in the body, are mpelled themselves to reject (*abjudicare*) all action, and to trans- it to God alone, a far-fetched mechanical view (*accersitum ex achina*), which is not philosophical.

But primitive force is changed by derivative in the impacts of dies, according as the exercise of primitive force is turned within without. For in truth, every body has an internal motion, nor can ever be brought to rest. This internal force, again, turns itself with- t, when it performs the duty of elastic force, when, namely, internal otion is impeded in its accustomed course, whence every body is sentially elastic, water not even excepted, and how violently this bounds, even the cannon balls (*pilæ tormentariæ*) show. And less every body were elastic, the laws of motions could not be oved true and binding. Meanwhile this force does not always nder itself conspicuous in the sensible parts themselves of bodies, nce these manifestly do not sufficiently cohere. But the harder a dy is, the more elastic it is and the more strongly it rebounds. deed in impact, when bodies mutually rebound from each other, is occurs through elastic force, whence indeed bodies always have eir own special motion from impact by their own special force, to hich a foreign impulse furnishes only an occasion of acting, and, so speak, a determination.

Hence, moreover, we understand that, although that primitive rce or form of substance (which, it is true, determines even the rms in matter, while it produces motion) is admitted, yet in ex- aining elastic force and other phenomena we must always proceed echanically, certainly by the forms which are modifications of atter and by impulses which are modifications of form. And it is eless, when distinct and specific reasons should be given, to have course immediately and in general (*generice*) to form or primitive rce in a thing, as it is useless in explaining the phenomena of created ings to recur to the first substance or God, unless his means or ends e at the same time specifically explained, and the proximate efficient even the special final causes are rightly assigned, so that his power d wisdom appear. For in general (whatever Descartes may have id), not only efficient, but also final causes, belong to physical dis-

cussion (*tractationis*); precisely as a house is badly exhibited, if any
its parts betrays its structure only, not its use. I have further alrea
pointed out above that, since we affirm that all things in nature a
explained mechanically, the reasons themselves of the laws of motio
or the principles of mechanics must be excepted, which should
deduced not from mathematics alone and the imagination of the su
ject, but from a metaphysical source, namely, from the equality
cause and effect, and from other laws of this kind which are essenti
to entelechies. Certainly, as has already been said, physics is subo
dinate through geometry to arithmetic, through dynamics to met
physics.

But the Cartesians, not sufficiently understanding the nature
forces, confounding motive force with motion, have seriously erre
in determining the laws of motions. For although Descartes kne
that the same force must be preserved in nature, and that a bod
although he attributed a part of its force (namely, the derivativ
to another, so retains a part that the sum of the forces remains t
same, (yet), deceived by the example of equilibrium or dead for
as I call it (which here does not enter into the reckoning, and
living force or of that which is now in question, it is only an infin
tesimal part), (he) believed that force exists in a composite syste
(*ratione composita*) of masses and velocities, or that it is the same
that which he calls quantity of motion, by which term he unde
stands the product of the mass into the velocity (*ex ductu massæ*
celeritatem), when, nevertheless, it has elsewhere been demonstrate
by me *a priori* that forces exist in a composite system of simp
masses and double velocities. I know that lately certain learne
men, when at length they were compelled to admit against th
Cartesians that the same quantity of motion is not preserved i
nature, and considered this too alone as absolute force, conclude
that this force also does not abide, and took refuge in the conserv
tion alone of relative (*respectivæ*) force, but we have discovered th
not in the conservation of absolute force even has nature bee
mindful of her own constancy and perfection. And the opinio
of the Cartesians indeed, in which the quantity of motion is pr
served, contradicts all the phenomena, (while) ours is wonderfull
confirmed by experiments.

The Cartesians err, also, in this, because they think that change
occur by a leap (*per saltum*); as if, for example, a body at rest can i
a moment pass over into a state of determined motion, or as if a bod
placed in motion can suddenly be brought back to rest, not by passin
through the intermediate grades of velocity, because they have plainl
not understood the use of elastic force in the concourse of bodie
Which, if it were absent, I confess that neither the law which I ca
the law of continuity would be observed in things, through whic

ıps are avoided, nor the law of equivalence by which absolute forces
e conserved, nor other excellent inventions of nature's architect
ve place, by which the necessity of matter and the beauty of form
e united. Moreover, the elastic force itself implanted in every body
ows that there is in every body, also, internal motion and infinite
o to speak) primitive force, although in the impact itself, when
cumstances demand, it is determined by derivative force. [For, as
an arch, any part whatever sustains the entire weight, or in a tense
rd the traction, and any portion whatever of compressed air, has as
uch force as the weight of the air pressing upon it, so any corpuscle
hatever, of the entire ambient (*ambientis*) mass is solicited to action
the conspiring force, and awaits nothing but an occasion for exer-
sing its power, as is shown by the example of gunpowder (*pulveris
yrii*)].

There are many other things in which I have been obliged to de-
ırt from Descartes, but those which I have now brought forth relate
iefly to the principles themselves of corporeal substances, and, if you
terpret them rightly, are capable of vindicating the ancient philos-
hy of a healthier school, which I see deserted by many of the
ore recent scholars, even those well disposed towards it, where there
as no need. The philosophy of Rev. Father Ptolemæus,[1] a man
ry versed in the principles of the ancients and the moderns, whose
markable teaching I examined myself, at Rome (from which philos-
hy I promise myself very much), has not yet reached us.

In a note, Leibnitz has added: In addition, I am pleased to state,
ıat although very many Cartesians boldly reject forms and forces in
odies, Descartes nevertheless spoke more moderately, and professed
is only, that he found no reason for using them. I indeed admit
at they should be rejected if of no use; but in this very thing I
ve shown that Descartes has erred. For not only in entelechies, or
ῷ δυναμικῷ, are placed the principles of mechanism, by which all
ings are regulated in bodies, but I have also shown in the "Acta
ruditorum,"[2] when I was replying to the very celebrated man, John
hristopher Sturm,[3] who attacked, in his "Physica Eclectica," my in-

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[1] Giovanni Battista Tolomei, 1653–1726, was acquainted with all the Euro-
ean languages and had a very extensive knowledge of all the sciences of his
me, and was reputed a profound theologian and skilful critic. Among his
orks was *Philosophia mentis et sensuum*, Romæ, 1696, fol., Augustæ Vin-
elicorum, 1698, fol. — Tr.

[2] Sept. 1698. The piece is the *De ipsa natura*, *cf.* Gerhardt, *Leibniz. philos.
chrift.*, 4, 504–516; Erdmann, 154–160; Jacques (in French), 1, 455–468; Janet
n French), 2, 553–567; transl., Duncan, 112–126. *Cf.* also Gerhardt's *Einlei-
ıng, op. cit.*, 4, 417. — Tr.

[3] Johann Christoph Sturm, 1635–1703, was, from 1669, Professor of Mathe-
atics and Physics at the University of Altdorf. His *Physica Eclectica*
ppeared at Nuremburg, 1697, 4to. While not celebrated for physical dis-

sufficiently understood doctrine, with irrefragable demonstration tha completeness being assumed, if there were nothing in matter but ma itself and arrangement of its parts, it would be impossible for an perceptible variation whatever to occur, since equivalences are subst tuted for limits, and by banishing conatus, or the force of tendenc to the future (the entelechies, that is, being removed), the state things present at one moment cannot be distinguished from the stat at any other moment. And I think Aristotle perceived this when h saw that, besides local motion, change is necessary in order to satisf the phenomena. But changes, although in appearance manifold, jus as qualities, are reduced in the last analysis to variation alone of force For all the qualities of bodies, that is, all their real stable accident except forms (that is, those which do not exist in transition, as motio but are known as present, although referred to the future), are a length, when analysis is set up, reduced to forces. Further, whe forces are removed, nothing real remains in motion itself, for fron variation alone of arrangement it cannot be determined where th true motion or the cause of variation is.

VIII

LETTER OF LEIBNITZ TO BASNAGE DE BEAUVAL EDITOR OF THE "HISTOIRE DES OUVRAGES DE SAVANTS," PRINTED IN THAT JOURNAL, JULY, 1698 pp. 329 *sq.*[1]

Explanation of the difficulties which M. Bayle has found in the Nev System of the Union of the Soul and the Body

[*From the French*]

I take the liberty, Sir, to send you this explanation of the difficulties which M. Bayle has found in the hypothesis which I hav proposed in order to explain the union of the soul and the body Nothing is kinder than the manner which he has used towards me and I consider myself honored by the objections he has placed in his excellent Dictionary, in the article Rorarius. Moreover, a mind as great and as profound as his cannot make them without instructing, and I shall try to profit by the light which he has shed upon

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coveries, he emphasized the method of experiment, and spread abroad a taste for experimenting. Germany is said to owe to him the introduction of the teaching of mathematics into the gymnasia and the common schools. — Tr.

[1] *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 4, 517–524, *cf.* G.'s *Einleitung*, *ibid.*, 419; Erdmann, *Leibnit. op. philos.*, 150–154; Jacques, *Œuvres de Leibniz*, 1, 481–487; Dutens, *Leibnit. op. om.*, 2, Pt. I., 74–79.

ese matters in this part as well as in many other parts of his work.
e does not reject what I had said of the conservation of the soul
d also of the animal, but he does not yet appear satisfied with the
anner in which I have claimed to explain the union and the inter-
urse of the soul and the body in the “Journal des Savants” of June
and of July 4, 1695, and in the “Histoire des ouvrages des savants,”
ebruary, 1696, pp. 274, 275.

Here are his words, which seem to indicate wherein he has found
fficulty: “I cannot understand,” he says, “the series of actions,
ternal and spontaneous, which would cause the soul of a dog to
el pain immediately after having felt joy, although it were alone in
e universe.” I reply that when I said that the soul, although only
od and it should exist in the world, would feel all that it now
els, I only employed a fiction in supposing that which cannot happen
turally, in order to show that the feelings of the soul are only a
nsequence of that which is already in it. I know not whether the
roof of incomprehensibility which M. Bayle finds in this series must
e sought alone in that which he calls lower, or whether he wished
introduce it from this time by the example of the spontaneous pas-
ge from joy to pain; perhaps, by wishing to throw out a hint that
is passage is contrary to the axiom which teaches us that a thing
ways continues in the state in which it is once if nothing occurs
hich obliges it to change, and that thus the animal having once joy
ill always have it if it is alone or if nothing external makes it pass
pain; in every case I agree with the axiom, and, further, I main-
in that it is in my favor, as in fact it is one of my grounds. Is it
ot true that from this axiom we conclude, not only that a body at
est will always be at rest, but also that a body which is in motion
ill always preserve this motion or change, that is to say, the same
olocity and the same direction, if nothing occurs to hinder it? Thus
thing does not remain only so long as it depends upon itself (*d'elle*)
the state in which it is; but also when this is a state of change,
continues to change, following always one and the same law. Now
is, according to my view, the nature of created substance to change
ontinually according to a certain order which conducts it *spontane-*
usly (if I may avail myself of this word) through all the states
hich will happen to it, so that he who sees all, sees in its present
tate all its past and future states. And this law of order, which con-
titutes the individuality of each particular substance, has an exact
elation to that which happens in every substance and in the entire
niverse. Perhaps I do not make too bold a statement if I say that
can demonstrate all this, but at present the question is only of
aintaining it as a possible hypothesis suitable for explaining the
henomena. Now in this way the law of the change of the substance
f the animal bears it from joy to pain at the moment that a continu-

ous solution is made in its body, because the law of the indivisib substance of this animal is to represent what is done in its body the way that we experience it, and also to represent in some fashi and in relation to this body all that is done in the world; the uniti of substance being nothing else than different concentrations of th universe represented according to the different points of view whic distinguish them.

M. Bayle continues: "I understand why a dog passes immediatel from pleasure to pain when, being very hungry, and eating brea we give him a blow with a stick." I do not know whether w understand it sufficiently. No one knows better than M. Bayle hin self, that it is in this that the great difficulty consists of explainin why that which passes in the body produces a change in the soul, an that it is this which has forced the defenders of occasional causes t recur to the care which God must take to represent continually to th soul the changes which take place in the body; whilst I believe tha it is the nature itself which God has given it to represent in virtue o its own laws what passes in the organs. He continues:

"But that his soul is constructed in such a way that at the momen he is struck he would feel the pain, although we should not strik him, although he should continue to eat the bread undisturbed an unhindered, this is what I cannot understand." I do not remembe also, to have said it, and we could say it only by a metaphysical fiction as when we suppose that God annihilates a body in order to produc a vacuum, both being equally contrary to the order of things. Fo since the nature of the soul was made at first in a manner suited t represent successively the changes of matter, the case we suppos cannot happen in the natural order. God could give to each substanc its phenomena independent of those of others; but in this way h would have made, so to speak, as many worlds without connection a there are substances; almost, as we say, that when we dream we ar in a world apart, and that we enter into the common world when w awake. It is not that the dreams are unrelated to the organs and the rest of the body, but that they are related in a manner less distinct. Let us continue with M. Bayle:

"I find, also," says he, "the spontaneity of this soul very incompatible with the feelings of pain, and, in general, with all the perceptions which are displeasing to it." This incomprehensibility would be certain, if spontaneous and voluntary were the same thing. Everything voluntary is spontaneous; but there are spontaneous actions which are without choice, and consequently are not voluntary. It does not depend upon the soul, always, to procure feelings which please it, since the feelings it will have depend upon those which it has had. M. Bayle proceeds:

"Moreover, the reason why this clever man does not approve the

rtesian system appears to me to be a false supposition : for it cannot
said that the system of occasional causes makes the action of God
ervene by a miracle (*Deum ex machina*) in the reciprocal dependence
the body and soul; for, as God intervenes only according to general
vs, he does not act there in an extraordinary way." It is not for
s reason alone that I do not approve of the Cartesian system; and
you consider mine a little, you see clearly that I find in itself that
ich leads me to embrace it. Moreover, if the hypothesis of occa-
nal causes should not need miracle, it seems that mine would not
se to have other advantages. I have said that we may imagine
ee systems to explain the intercourse we find between the soul and
body; namely, first, the system of the influence of the one upon
other, which is that of the schools taken in the common sense,
ich I believe impossible, after the Cartesians; second, that of a
rpetual overseer, who represents in the one that which takes place
the other, very much as if a man were charged with making two
d clocks always to agree, which of themselves would not be capable
agreeing, and this is the system of occasional causes; and third,
at of the natural agreement of two substances such as would exist
tween two very accurate clocks; and I find this as possible as the
stem of the overseer, and more worthy of the author of these sub-
nces, clocks or automata. But let us see whether the system of
casional causes does not in reality suppose a perpetual miracle.
ey say here, no, because God would act according to this system
ly through general laws. I agree, but, in my opinion, that is not
fficient in order to remove the miracles: if God did it continually,
ey would not cease to be miracles, taking this word not popularly,
a thing rare and wonderful, but philosophically, as that which
ceeds the forces of created beings. It is not sufficient to say that
d has made a general law; for, besides the decree, there must also
a natural means of executing it; that is to say, what takes place
ust be capable of being explained by the nature which God gives to
ings. The laws of nature are not so arbitrary or so indifferent as
any think. If God decreed, for example, that all bodies should
ve a tendency toward a circular line, and that the radii of the circles
ould be proportional to the size of the bodies, it would be necessary
say that there is a means of executing this decree by more simple
ws, or rather, it would be necessary to admit that God will execute
miraculously, or at least by angels expressly charged with this care,
ry nearly like those who were sometimes given to the celestial
heres. It would be the same if some one said that God has given
the bodies natural and primitive gravities by which each should
nd to the centre of its globe, without being pushed by other bodies;
r in my opinion this system would need a perpetual miracle, or at
ast the assistance of the angels.

“Does the internal and active property communicated to the fo of bodies know the series of actions it is to produce? Not at all; we know by experience that we are ignorant that we have in an h such or such perceptions.” I reply that this property, or rather soul or form, does not know them distinctly, but that it feels th confusedly. There is in each substance traces of all which has h pened to it and of all which will happen to it. But this infinite m titude of perceptions hinders us in distinguishing them; as whe hear a great confused noise of a whole people, I do not distingu one voice from another.

“It would be necessary, then, that the forms be directed by so external principle in the production of their acts; would not this the *Deus ex machina*, just the same as in the system of occasio causes?” The preceding reply puts a stop to this inference. On contrary, the present state of each substance is a natural result of preceding state; but there is only one infinite intelligence the which can see this result, for it envelops the universe in souls as w as in each portion of matter.

M. Bayle concludes with these words: “Finally, as he suppos with much reason that all souls are simple and indivisible, we can understand how they can be compared to a pendulum, that is to s that by their original constitution they can diversify their operatio by availing themselves of the spontaneous activity which they wou receive from their Creator. We conceive clearly that a simple bei will always act uniformly, if no foreign cause turns it aside. If were composed of many pieces, as a machine, it would act diverse because the particular activity of each piece might change at eve moment the course of that of the others; but in a single substan where will you find the cause of the change of operation?” I fi that this objection is worthy of M. Bayle, and that it belongs to th which most deserve to be cleared up. But I also think that if I h not provided for it at first, my system would not deserve to be amined. I have compared the soul to a pendulum only in regard the regulated precision of its changes, which is indeed but imperf in the best clocks, but which is perfect in the works of God; and may say that the soul is an immaterial automaton of the most accura kind. When it is said that a simple being will always act uniform there is a distinction to be made, if *to act uniformly* is to follow p petually one and the same law of order or of continuity, as in a ce tain rank or series of numbers, I admit that every simple being itse and indeed every complex being acts uniformly; but if *uniform* means likewise, I do not agree. To explain the difference of th sense by an example, a movement in a parabolic line is uniform the first sense; but it is not so in the second, the portions of the pa bolic line not being similar among themselves like those of the straig

es. It is true, to mention it in passing, that a simple body left to
lf describes only straight lines, if we speak only of the centre
ich represents the motion of this entire body; but when a simple
l rigid body, having once received a turbination or circulation
und its centre, retains it in the same sense and with the same velo-
y, it follows that a body left to itself may describe circular lines by
points distant from the centre, when the centre is at rest, and even
ain quadratrices, when this centre is in motion, which have the
inate composed of the straight line running through the centre,
l of the right sine whose versed sine is the abscissa, the area being
he circumference as this straight line is to a given straight line.
e must consider also that the soul, wholly simple as it is, has always
eeling composed of many perceptions at once, which fact effects
much for our purpose as if it were composed of pieces like a
chine. For each preceding perception influences the following,
formably to a law of order which exists in perceptions as in move-
nts. Thus the majority of philosophers, for many centuries, who
ow thoughts to souls and to angels, which they believe destitute of
body, to say nothing of the intelligences of Aristotle, admit a
ontaneous change in a simple being. I add that since the percep-
ns which are found together in one and the same soul, at the same
e, involve a multitude veritably infinite of minute indistinguishable
lings as the sequel must develop, we must not be astonished at the
inite variety of that which must result therefrom in time. All this
only a consequence of the representative nature of the soul, which
ust express what passes and indeed what will pass in its body, and
some fashion in all others, through the connection or correspon-
nce of all parts of the world. It would perhaps suffice to say that
d, having made atoms corporeal, might also well have made them
material to represent the first; but we have thought it would be
ll to dwell upon it a little more.

For the rest, I have read with pleasure what M. Bayle says in the
icle Zeno. It might, perhaps, be perceived that what can be drawn
erefrom agrees better with my system than with every other, for
at there is of reality in extension and motion consists only in the
ound of the order and the regulated series of phenomena and per-
ptions. In like manner, as many academicians and sceptics as
ose who wish to reply to them, seem to be embarrassed principally
ly because they sought a greater reality in sensible things outside
us than that of the regulated phenomena. We conceive *extension*
conceiving an order in coexistences, but we must not conceive
any more than space, after the fashion of a substance. It is like
e, which presents to the mind only an order in changes. And as
r *motion*, what is real therein is the *force* or the power; that is to
y, what there is in the present state which carries with itself a

change for the future. The rest is only phenomena and relatio The consideration of this system shows also that, when we enter in the heart of things, we find more reason than we thought in t majority of the philosophic sects. The little substantial reality the sensible things of the Sceptics; the reduction of all to harmoni or numbers, ideas, and perceptions of the Pythagoreans and Plato ists; the one and also the all of Parmenides and of Plotinus witho any Spinozism; the Stoic connection, compatible with the spontanei of the others; the vital philosophy of the Kabbalists and Hermeti who put feeling above everything; the forms and entelechies Aristotle and the Scholastics, and even the mechanical explanati of all particular phenomena, according to Democritus and the modern and so forth, find themselves reunited as in a centre of perspectiv whence the object, obscured in regarding it from an entirely differe point, shows its regularity and the agreement of its parts; we ha failed through a sectarian spirit in limiting ourselves by the rejecti of others. The formalist philosophers blame the material or co pusculary ones, and *vice versa*. We wrongly give limits to the divisio and subtilty as well as to the richness and beauty of nature when w posit atoms and the vacuum, when we imagine certain primary el ments, such as the Cartesians, instead of veritable unities, and whe we do not recognize the infinite in everything, and the exact expre sion of the greatest in the smallest, united to the tendency of eac to develop itself in a perfect order, which is the most admirable an the most beautiful result of the sovereign principle, whose wisdo would leave nothing better to be desired by those who could unde stand its economy.

IX

FRAGMENT OF A LETTER TO AN UNKNOWN PERSON

October 16, 1707[1]

[*From the French*]

I think, then, I have good reasons for believing that all the diffe ent classes of beings whose union forms the universe, exist in th ideas of God only as so many ordinates of the same curve, the unio of which does not allow the placing of others between them, becaus that would indicate disorder and imperfection. Men are connecte n the animals, these with the plants, and these again with the ils, which will be united in their turn with bodies which the ses and the imagination represent to us as perfectly dead and eless. Now since the law of continuity demands that *when the ntial determinations of a being approach those of another so that like- accordingly all the properties of the first must gradually approach e of the last*, it is necessary that all the orders of natural beings n only one chain, in which the different classes, like so many s, connect so closely the one to the other, that it is impossible the senses and the imagination to fix the precise point where any begins or ends: all the species which border on or which occupy, o speak, the regions of inflection and retrogression being obliged e equivocal and endowed with characters which can refer to the ghboring species equally. Thus the existence of Zoophytes for mple, or, as Buddeus[1] calls them, *Plant-Animals*, is nowise mon- ous, but it is indeed agreeable to the order of Nature that there some. And such is the force of the principle of continuity with that, not only should I not be astonished to learn that beings had n found which as regards many properties, for example, those of intaining and multiplying themselves, might pass for vegetables h as good right as for animals, and which would reverse the ordi- y rules, based upon the supposition of a perfect and absolute sepa- ion of the different orders of simultaneous beings which fill the verse; I should be so little astonished, I say, that I am indeed vinced that there must be such, that Natural History will perhaps e day succeed in knowing them, when it shall have studied more s infinite number of living beings, whose minuteness hides them m ordinary observation and which are found concealed in the

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[1] Guhrauer, *Leibnitz, Eine Biographie*, Anmerkungen z. zw. Buche, pp 31–33. Guhrauer says in the note which contains the Fragment here translated "The Principle of Continuity, with which Leibnitz accomplishes so much i

chology, led him to surprising glimpses in his views of animate nature. where has Leibnitz expressed himself so clearly upon this subject, as in the er to an unknown person, of Oct. 16, 1707, of which a fragment occasioned notorious controversy between Maupertuis and König, 1752. It stands h many others in König's *Appel au Public du jugement de l'académie ale de Berlin*, etc. See p. 45. [Then follows the letter]. . . . This is the e letter which the Berlin Academy, under the inspiration of Maupertuis, lared a forgery, and struck off the list of the Academicians Professor ig as an impostor. — There are perhaps few pieces of Leibnitz, whose uineness are so certified to the connoisseur, as this letter (which Dutens Erdmann have overlooked). Voltaire also (in his letter to König) recog- ed its genuineness at once, although only from motives which he drew from style. The Academy was right only in the fact that the letter could not e been addressed to Hermann. *Cf. Leibn. opp.* [ed. Dutens], 3, 531." — Tr.

Leibnitz probably refers to Johann Franz Buddeus, 1667–1729, assistant the philosophical faculty at Wittenberg, Professor of Greek and Latin at ourg Gymnasium, of Philosophy at Halle, and of Theology at Jena. He lished *Elementa philosophiæ practicæ instrumentalis et theoreticæ*, Halæ, 3. — Tr.

bowels of the earth and the depths of the waters. We remark only since yesterday what grounds have we for denying to reaso what we have not yet had occasion to see? The principle of co tinuity is then beyond doubt with me, and might aid in establishin many important truths in the true philosophy, which, raising itse above the senses and the imagination, seeks the origin of phenomen in the regions of the intellect. I flatter myself that I have some idea concerning them, but this age is not qualified to receive them.

X

THAT THE MOST PERFECT BEING EXISTS[1]

[*From the Latin*]

I call every simple quality which is positive and absolute, o expresses whatever it expresses without any limits, a *perfection.*

But a quality of this sort, because it is simple, is therefore irresolv able or indefinable, for otherwise, either it will not be a simpl quality but an aggregate of many, or, if it is one, it will be circum scribed by limits and so be known through negations of furthe progress[2] contrary to the hypothesis, for a purely positive quality wa assumed.

From these considerations it is not difficult to show that *all perfec tions are compatible with each other* or can exist in the same subject.

For let the proposition be of this kind:

A and B are incompatible

(for understanding by A and B two simple forms of this kind o perfections, and it is the same if more are assumed like them[3]), it i evident that it cannot be demonstrated without the resolution o the terms A and B, of each or both; for otherwise their natur would not enter into the ratiocination and the incompatibility coul be demonstrated as well from any others as from themselves. Bu now (by hypothesis) they are irresolvable. Therefore this proposition cannot be demonstrated from these forms.

But it might certainly be demonstrated by these if it were true because[4] it is not true *per se*, for all propositions necessarily true ar er demonstrable or known *per se*. Therefore, this proposition is necessarily true. Or[1] if it is not necessary that A and B exist in same subject, they cannot therefore exist in the same subject, and e the reasoning is the same as regards any other assumed qualities his kind, therefore all perfections are compatible.

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[1] Gerhardt, *Leibniz. philos. Schrift.*, 7, 261–262. *Cf.* Gerhardt's *Einleitung ibid.*, 251. — Tr.

[2] Leibnitz had first written: "atque ita ope negationum," *i.e.* and thus als by means of negations. — *Gerhardt.* — Tr.

[3] The words, "idemque est . . .," were added later. — *Gerhardt.* — Tr.

[4] For the following, up to the words: "aut per se notæ," Leibnitz at first wrote: "(esset enim necessaria, neque tamen per se nota)" *i.e.* for it would be necessary, and yet not known *per se.* — *Gerhardt.* — Tr.

is granted, therefore, that either a subject of all perfections or most perfect being can be known.

Vhence it is evident that it also exists, since existence is contained he number of the perfections.[2]

erhardt says: "In the foregoing is found what Leibnitz brought re Spinoza. The following he appears later to have added:"

The same can be shown also as regards the forms composed from absolute forms, provided they are granted.]

showed this reasoning to D. Spinoza when I was in The Hague,[3] thought it solid; for when at first he opposed it, I put it in writ- and read this paper before him.

SCHOL.

he reasoning of Descartes concerning the existence of the most fect being assumed that the most perfect being can be known, or ossible. For this being assumed because a notion of this kind is uted, it immediately follows that that being exists, since we framed notion in such a way that it immediately contains existence. But question is asked whether it is within our power to conceive such eing, or whether such a notion exists on the side of the thing, and be clearly and distinctly known without contradiction. For the onents will say that such a notion of the most perfect being or of eing existing through his essence is a chimera. Nor is it sufficient Descartes to appeal to experience and to allege that he perceives same in such a manner in himself clearly and distinctly, for this o break off, not to complete the demonstration, unless he shows method through which others also can attain the same experience; as often as we bring experiences into the midst of the demonstra- n, we ought to show others also the method of producing the same erience, unless we wish to convince them by our authority alone.

This sentence up to "omnes perfectiones," was added later. — *Gerhardt.* R.

At first: "inter perfectiones." — *Gerhardt.* — TR.

November, 1676; *cf.* Guhrauer, *Leibnitz, Eine Biographie*, Pt. I., 184. — TR.

XI

WHAT IS IDEA[1]

[*From the Latin*]

First of all (however), by the term *Idea* we mean *something whi is in our mind;* marks (*vestigia*) therefore impressed upon the bra are not ideas, for I assume as certain that the mind is something el than the brain, or a more subtile part of the brain substance.

But there are many things in our mind — for example, thought perceptions, affections — which we know well are not ideas, althoug without ideas they would not be produced. For idea for us *consis not in a certain act of thought, but in a power* (*facultate*), and we sa we have an idea of a thing, although we do not think of it, provide we can on a given occasion think of it.

There is nevertheless also in this a certain difficulty, for we have remote power of thinking about all things, even of those of which w have not perchance ideas, because we have the power of recoverin them; idea, therefore, demands a *certain power near at hand of thinkin about a thing or facility.*

But not even this suffices, for he who has a method which if h follows he can attain the thing, does not, therefore, have an idea of i As, if I should enumerate in order the sections of a cone, it is certai that I would come into the knowledge of opposite hyperbolas, althoug I have not yet an idea of them. There must necessarily, therefor be something in me, *which not only leads to the thing, but also expresses i*

That is said to *express* anything in which are contained condition corresponding to the conditions of the thing to be expressed. Bu these expressions are varied; for example, the model of the machin expresses the machine itself, a perspective drawing of a thing in plane expresses a solid, an oration expresses thoughts and truths letters express numbers, an algebraic equation expresses a circle o other figure; and because these expressions have something common from the contemplation of the conditions of the expressing thing, w can come into the knowledge of the corresponding properties of th thing to be expressed. Whence it is evident that it is not necessar that that which expresses be similar to the thing expressed, provide a certain analogy of conditions is preserved.

It is also evident that some expressions have a basis in nature, bu others at least are partly based in will (*arbitrio*), as are the expression which are produced by sounds or characters. Those things whic based upon nature demand either some similitude, such as exists ween a great circle and a little one, or between a region and a map the region; or at least a connection such as exists between a circle an ellipse which represents it in perspective (*optice*), for any point atever of an ellipse corresponds, according to a certain fixed law, some point of a circle. Nay, rather, the circle, by any other similar ure in such a case, would be badly represented. In like manner, ry complete effect represents a complete cause; for I can always, m the knowledge of such effect, come to the knowledge of its cause. us the deeds of each one represent his mind, and the world itself a measure represents God. It can also happen that those things ich arise from the same cause express themselves by turns; for mple, gesture and discourse. So certain deaf persons understand se who speak, not by the sound, but by the motion of the mouth.

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[1] Gerhardt, *Leibniz. philos. Schrift.*, 7, 263–264. *Cf.* Gerhardt's *Einleitung ibid.*, 251–252. — Tr.

And so the idea of things existing in us is nothing else than the t that God, the author alike of things and the mind, has impressed s power of thought upon the mind, so that out of its own workings can draw those things which perfectly correspond to those which low from things. And so, although the idea of a circle is not like circle, yet from it truths can be drawn which in the true circle perience would no doubt confirm.

XII

ON THE METHOD OF DISTINGUISHING REAL FROM IMAGINARY PHENOMENA[1]

[*From the Latin*]

Being is that the concept of which involves something positive, or t which can by us be conceived, provided that which we conceive possible, and does not involve a contradiction, which we know, th if the concept is perfectly explained, and involves no confusion; d briefly, if the thing actually exists, for that which exists is cernly a being or a possible thing.

But as far as Being is explained by a distinct concept, so is Existence a distinct perception; and that we may the better understand this, must see in what ways existence is proved. And in the first place, thout proof, I affirm existence, from the simple perception or exrience of which I am conscious within myself; that is, in the first ce, *myself*, thinking the various things, then the various *phenomena* themselves, or the appearances which exist in my mind. For th two, since they are immediately perceived by the mind with the int vention of no other, can be wholly proved, and it is equally cert that there exists in my mind the species of a mountain of gold or o centaur, when I dream of these, as it is certain that I exist who drea for each is contained in this one thing, that it is certain that t centaur appears to me.

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[1] Gerhardt, *Leibniz. philos. Schrift.*, 7, 319–322; Erdmann, *Leibnit. opera ilos.*, 443–445. — Tr.

Let us now see by what signs we may know what phenomena are re We determine this now, both from the phenomenon itself, and fr the antecedent and consequent phenomena. From the phenomen itself, whether it be vivid, multiplex, congruous. It will be vivid the qualities, as light, color, heat, appear sufficiently intense; it w be multiplex if they are varied, and adapted to many tests and to t institution of new observations; for example, if we experience in t phenomenon not only colors but also sounds, odors, flavors, tact qualities, and those things both in the whole and in its various pa which again we can discuss in various relations (*variis causis tr- tare*). Which things, indeed, a long series of observations, institut especially with design and with choice, is wont to meet neither dreams nor in those images which the memory or the phantasy p- sents, in which the image is very often weak and also disappe (*disparet*) in the course of the discussion. The phenomenon will congruous when it consists of many phenomena, the reason of wh can be given from themselves in turn, or from some common hypothe sufficiently simple; then it will be congruous if it preserves the usa of other phenomena which have frequently presented themselves to so that the parts of the phenomenon have that position, order, resu which similar phenomena have had. Otherwise, they will be suspecte for if we should see men moved in the air, sitting upon the hippogryp of Ariosto, we should doubt, I think, whether we were dreaming awake. But this proof can be referred to another head of co siderations assumed from the preceding phenomena. With whi phenomena the present phenomenon must be congruous, if, name they preserve the same usage, that is, if the reason of this can given from the preceding, or all agree with the same hypothesis as common reason. But, undoubtedly, the strongest proof is the agr ment with the whole course of life, especially if very many othe affirm that the same agrees with their own phenomena also; for, th other substances similar to us exist, is not only probable, but inde certain, as I shall soon say. But the most powerful proof of the real of phenomena, which, indeed, alone suffices, is the success in predicti future phenomena from the past and present, whether that predicti is founded in reason, or in the hypothesis thus far succeeding, or the usage thus far observed. Nay, although this entire life were sa to be nothing but a dream, and the visible world nothing but antasm, I should call this dream or phantasm real enough, if, using son well, we were never deceived by it; but just as we know from se what phenomena must be regarded as real, so, on the other nd, whatever phenomena conflict with these which we judge real, o those whose fallacy we can explain from their own causes, these ly we think apparent.

But it must be confessed that the proofs of real phenomena which s far have been brought forward, howsoever united, are not demon- ative; for, although they have the greatest probability, or, as is nmonly said, produce a moral certainty, they, nevertheless, do not ate a metaphysical certainty, so that the assertion of the contrary plies a contradiction. And thus, by no argument can it be abso- ely demonstrated that there are bodies, nor anything keep certain ll-ordered dreams from being objects to our mind, which are nsidered by us as true, and on account of the agreement among emselves with respect to use are equivalent to truths. Nor is the gument of great weight, as they commonly allege, that thus God uld be a deceiver; certainly, every one sees how far this is from demonstration of metaphysical certainty, for we are deceived by our n judgment, not by God, when we assert anything without accu- e proof. And although there is present great probability, never- eless God is not therefore a deceiver who presents this to us. For at, if our nature were not perchance capable of real phenomena; ely God would be not so much to be blamed as to be thanked, for, causing these phenomena, since they could not be real, to be at st accordant, he showed us that which in the entire usage of life uld equal in worth real phenomena; what, indeed, if this whole ort life were nothing but a certain long dream, and we should awake ly in death? a conception such as the Platonists seemed to have; since we are destined for eternity, and this whole life, although it ould continue many thousands of years, has in respect of eternity e value of a point, how small will be the interposition of such a little eam in the full truth, the ratio of which is much less than that of e dream to life; and yet no sane person will say that God is a ceiver, if by chance he should happen to observe any short but tinct and congruous dream in his mind.

Hitherto I have spoken of those things which appear; now we ust see about those which do not appear, which, nevertheless, can inferred from those which do appear. And indeed it is certain at every phenomenon has some cause. Now if any one says that the use of the phenomena is in the nature of our mind, in which the enomena are, he will affirm nothing indeed false, but nevertheless will not express the whole truth. For, in the first place, there is cessarily a reason why we ourselves exist rather than not exist, and hough we should assume that we existed from eternity, yet the

reason of the eternal existence must be sought, which reason mu
be found either in the essence of our mind or outside it. Ar
indeed, there is nothing to prevent the existence of innumerable otl
minds as well as ours; but all possible minds do not exist, whicl
prove from this, because all existing things have intercourse wi
each other. Further, minds can be known of another nature th
ours and having intercourse with this of ours. Moreover, that
existing things have intercourse with each other is demonstrated bo
from this, that otherwise we cannot say whether anything in resp
to these things happens now or not, and so the truth or falsity
such a proposition is not given, which is absurd, and because ma
extrinsic denominations are given; nor does any one become
widower in India by the death of his wife in Europe, without a r
change happening in him. For every predicate is truly contained
the nature of the subject. If now some possible minds exist, we a
why not all; then because it is necessary that all existing things ha
intercourse, it is necessary that there be a cause of this intercour
nay, it is necessary that all express the same nature, but in a differe
way; but the Cause through which it happens, that all minds ha
intercourse or express the same thing and so exist, is that which p
fectly expresses the universe, namely God. The same cause has
cause and is unique. Hence it is at once evident that many min
exist besides ours, and since it is easy to think that men who are co
versant with us can have just as much reason to doubt concerning
as we concerning them, and no greater reason wages war in o
behalf, they also exist and will have minds. Hence already, sacr
and profane history, and whatever things pertain to the state of min
or rational substances, are considered as confirmed.

With respect to bodies, I can demonstrate that not only light, he
color, and similar qualities are apparent, but also motion and figu
and extension. And if anything is real, that alone is the power
acting and enduring, and so in this (as it were matter and form
consists the substance of the body; but those bodies which have
substantial form, those only are phenomena, or at least aggregates
the true.

Substances have metaphysical matter or passive power as far
they express anything confusedly, active, as far as they express
distinctly.

ADDITIONS AND CORRECTIONS

Che following Additions and Corrections are made in the interest of the ater accuracy and completeness of the book. The material incorporated rein has been obtained chiefly since the earlier portion of the book was in e. As it could not be introduced in its proper place, it is deemed best to ert it here rather than to omit it altogether. It will be noticed that it per-ıs chiefly to the earlier portion of the *New Essays*, the annotation of ich, not a part of the Translator's plan at the outset, began with the print- and has grown with the progress of the work. — Tr.

ᴾAGE 3, note 2, add: Erdmann, 677–678. The letter, after speaking the nature, processes, and extent of our knowledge of physics, proceeds ıs: "You enquire concerning the things of spirits or rather concern-; incorporeal things; and you say that we see the mechanical disposi-n of the parts, but that we do not see the principles of the mechanism. ry well, but when we see motion also, then we know the cause of the tion or force. The source of the mechanism is primitive force (*vis imitiva*), but the laws of motion, according to which impulses (*impetus*) derivative forces arise out of this primitive force, proceed from the ception of good and evil, or from that which is most fitting. Thus happens that efficient causes depend upon final causes, and spiritual ngs are by nature prior to material things, as indeed to us they are or in knowledge, because we perceive more immediately (*interius*) the nd (nearest — *intimam* — to us) than the body, as indeed Plato and scartes have observed. This force, you say, is known by its effects, t as it is in itself. I reply that so it would be if we had no mind, and not know. The mind has in itself perceptions and appetites, and in se its nature consists. And as in the body we know ἀντιτυπίαν, and m in general, although we do not know what the forms of the insensible dies are, so in the mind we know perception and appetite, although we not know distinctly the insensible ingredients of the confused percep-ns, by which the insensible things of bodies are expressed. Spiritual ngs are perceived, you say, just as the air, the wind, the light, yet not that account sufficiently known; but to me the air, the wind, the light m to be no more spiritual than running water, nor do they differ from s save in subtility. Spirits, minds, and simple substances or monads in universe cannot be comprehended by the senses and the imagination, cause lacking in parts. Do you ask whether I believe that there are dies which do not fall within the range of vision? Why may I not believe? nay, rather, concerning them I think I cannot doubt. In micr scopes we see animalcula otherwise imperceptible, and the nerves of the animalcula and other animalcula by chance swimming in their own flu cannot be seen. The subtility of nature proceeds into infinity. Final you seek for definitions of matter, body, spirit. Matter is that which r sists in antitypy, or that which resists penetration, and so naked mat is merely passive. Body, moreover, has besides matter also active fo *Body*, moreover, is either a corporeal substance or a mass collected fro corporeal substances. *Corporeal substance* I call that which consists in simple substance or monad (i.e. in the mind or somewhat analogous the mind) and in an organic body united to it. But *mass* is an aggrega of corporeal substances, as a cheese sometimes consists of a conflux worms. Then a *monad* or a substance simple in kind contains percepti and appetite, and is either primitive or *God*, in which is the ultima reason of things, or derivative, that is a created monad, and this is eith endowed with reason, *Mind* (*mens*), or endowed with sense, that *Soul* (*anima*), or endowed with a certain lower grade of percepti and appetite, or analogous with soul (*animae analoga*), which is conten with the naked name of monad, since we do not know its various grade Every monad, furthermore, is inextinguishable; for simple substance can neither begin nor end, except by creation or annihilation, that i miraculously. And, moreover, every created monad is endowed with certain organic body, by means of which it perceives and appetize although it is variously (e)volved through births and deaths, involve transformed, and exists in a perpetual flux. Monads, then, contain i themselves the Entelechy, or the primitive force (*vis primitiva*), an without them matter would be passive merely; and any mass whateve contains innumerable monads, for although each organic body of natur has its own corresponding monads, yet it contains in the parts othe monads endowed in like manner with their own organic bodies servin the primary body; and all nature is nothing else, for all aggregates mus necessarily result from simple substances, as it were from true element But atoms or extended bodies, and yet infrangible, are a fiction, whic cannot be explained except by a miracle, and are without reason; no may we from them assign the causes of the forces and motions. An although they might be admitted, they would not be truly simple, for thi very reason, because they are extended and endowed with parts. Thus have replied to your questions, and set forth my views, as far as may b in a few words and by letter."

Page 6, line 16. For "1706" read "1704," and cf. *infra*, p. 101, not 1, line 2 from bottom, and *infra*, p. 531, note 2, ¶¶ 2, 3, where this por tion of note 1, p. 101, is corrected.

Page 13, note 1. Add: translation also in Duncan, *Philos. Wks.* o *Leibnitz*, 34–39; German translation in J. H. v. Kirchmann, *Die klein philos. wichtig. Schrift. v. Leibniz*, 36–42 (*Philos. Bibliothek*, Bd. 81 *Erläuterungen*, Bd. 82), Leipzig, 1879.

Page 15, note 2. After "translation," instead of "Appendix," etc., d "Duncan, *Philos. Wks. of Leibnitz*, pp. 71–80; German translation J. H. v. Kirchmann, *Die klein. philos. wichtig. Schrift. v. Leibniz*, -67."

Page 16, line 22, "Huygens." *Cf. infra*, p. 150, note 3. On Huygens' ysical views, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 341–397. New ed. ygens, *Œuvres complètes*, La Haye, 1888–1893, 5 vols., still in progs. These 5 volumes contain correspondence only.

Page 16, line 30, "pliable." "Leibnitz means," says J. H. v. Kirchnn, *Erläuterungen zu Leibniz. d. klein. philos. wichtig. Schrift.*, Leipzig, 79, p. 109, "that, although bodies contain no vacuum, yet from the fact at they can become greater or lesser in extent, the other substances ich fill out the gaps of the body proper are by pressure removed from or conversely with the cessation of the pressure penetrate into its cuum. An actual extension or cohesion of a definite homogeneous body, ich contains no gaps, Leibnitz does not assume, although the Scholastics irmed it for a long time." On the development of Leibnitz's views om the atomism to which he was at first inclined, but almost immedily rejected, to the dynamic idealism of his monad doctrine, *cf.* D. lver. *Der Entwicklungsgang d. Leibniz. Monadenlehre bis 1695*, Leip, William Englemann, 1885; Lasswitz, *Gesch. d. Atomistik*. 2, 446 *sq.*

Page 17, line 11, "De Seriebus infinitis." *Cf. infra*, p. 424, note 2.

Page 21, line 12, "Fabritius." *Cf. infra*, p. 102, note 2. The letter Fabritius to Spinoza here mentioned is found in Spinoza, *Opera*, ed. an Vloten and Land, 2, 181–182; *Philos. Wks.* Elwes' translation, 2, 4.

Page 26, line 4, "Clerc." Jean Le Clerc, 1657–1736. Professor of ilosophy, Belles-Lettres, and Hebrew in the Remonstrant Seminary at msterdam, 1684–1712, and thereafter of Church History, exercised conlerable influence in the direction of scientific Biblical criticism, and rote several philosophical works; but his greatest literary influence was ercised through the serials or reviews of which he was the editor, nong which were the "Bibliothèque universelle et historique," here entioned; the "Bibliothèque choisie," Amsterdam, 1703–1713; and the Bibliothèque ancienne et moderne," 1714–1726.

Page 28, line 6, "Understanding." *Cf.*, also, *infra*, p. 41. The term used in the sense of the Greek *νοῦς*, Latin *intellectus*, to indicate the tality of the human intellectual powers, the Reason in the larger sense that term, in the language of Kant and his school, *Vernunft*.

Page 42, line 10, "Plato." Schaarschmidt says: "This comparison to be considered as provisional only, in order to illustrate the opposition etween the author's and Locke's point of view by a familiar example. trictly taken the parallel does not hold good, as may be seen from the addition Leibnitz makes. Aristotle, that is to say, — to call to mind onl the chief antitheses of the respective theories of knowledge, — assum before all things principles which are peculiar to the spirit as such, whi Locke denies the same ; Plato, again, recognizes experience by means sense-perception in a wholly different, more real, sense than Leibnitz an affirms in no wise, as Leibnitz, an absolute spontaneity of the present tive power."

Page 42, line 13, "Acroamatic." *Cf. infra*, p. 272, note 1.

Page 42, line 5 from bottom, "Aristotle." Schaarschmidt says "Aristotle has certainly compared the mind (or the Reason — in hi language νοῦς), though not the soul in general, with an unwritten tablet. *Cf.* Περὶ Ψυχῆς, Bk. III., chap. 4, § 11, Berlin Academy ed., 439 b 31 ed. E. Wallace, Cambridge, 1882, p. 159: *δεῖ δ' οὕτως ὥσπερ ἐν γραμματεί ᾧ μηθὲν ὑπάρχει ἐντελεχείᾳ γεγραμμένον· ὅπερ συμβαίνει ἐπὶ τοῦ νοῦ.* "Thi meanwhile is by no means to be understood in the sense that thought i merely something taken up from without, the spirit a merely receptiv faculty. According to Aristotle, the thinking spirit is rather partly re ceptive or passive, partly productive or active, as is clear from this sam Bk. III. of the Περὶ Ψυχῆς." *Cf.*, also, Zeller, *Philos. d. Griech.*, 3d ed. II., 2 [Vol. 4], 566 *sq.*

Page 43, line 1, "Schoolmen." The Scholastic philosophy, to whic Leibnitz frequently refers in this and other works, "assumed," say Schaarschmidt, "a three-fold source of knowledge: 1. *Experientia*, ex perience through the senses; 2. *Ratio*, the logical faculty of drawin conclusions; 3. *Intellectus*, the faculty of ideas, which is precisely th understanding (or spirit) of Aristotle, active for itself from within, no creative out of sense-experience."

Page 43, line 4, "Prolepses." The Stoics derived general ideas o conceptions, — *κοιναὶ ἔννοιαι* or *προλήψεις*, *communes notiones*, — like al knowledge, from sensuous perception, explaining them by the persistenc and combination of the sense-impressions. They are not to be understood, therefore, in the later sense as innate ideas, independent of experience and peculiar to the spirit as such. The Stoic theory was mor like Locke's than like Aristotle's; and according to Plutarch, *Placit philosophorum*, IV., 11, considered the soul as originally a blank table (*tabula rasa*), upon which the outer world made its impressions. Through Boethius [470–524] the Stoic theory of knowledge became the source of mediæval nominalism. On the Stoic doctrine of knowledge, *cf.* Zeller, *Philos. d. Griech.*, 3d ed., Leipzig, 1880, III., 1 [Vol. 5], 70–86; Benn, *Greek Philosophers*, 2, 15; Windelband-Tufts, *Hist. of Philos.*, 202 *sq.*

Page 43, line 14, "Necessary truths." "Leibnitz," says Schaarschmidt, "here hints at his later more closely grounded division of truths into necessary and factual (contingent). The former are, according to onitz, the 'eternal truths of reason,' partly logical laws, partly general ons which belong to the mind as such, and are developed out of itself rder to come into consciousness. The latter, the factual truths, are ned by us through abstraction from experience, and therefore real. this antithesis, further developed in the second book, Kant joins on t of the so-called *a priori* and *a posteriori* thought, in that he assigned he former the character of necessity and universality, to the latter t of contingency and actuality (particularity)."

AGE 44, line 13, "Innate." Leibnitz, in here maintaining that expe- nce can never furnish anything absolutely and universally valid, and herefore incapable of serving as the foundation of the sciences dealing h and requiring absolutely universal fundamental truths, such as gic, Metaphysics, and Ethics, indicates in the sharpest and clearest nner his opposition to Locke's theory of knowledge.

s regards the nature of these pure truths of reason and the method by ch they arise in consciousness, Leibnitz assumes and maintains that y are developed by the mind out of itself, and thus come into conscious- s. Of this self-development, "this transition from potentiality to uality (*a potentia ad actum*)," sense-experience furnishes the occasion, is not the sufficient reason. Leibnitz to this extent, therefore, main- ns against Locke the "Innateness of Ideas." But "he oversteps this alistic principle in so far as he assumes an absolute spontaneity of the lerstanding, while at the same time that the understanding itself in its elopment is plainly shown in *reciprocal action* with experience, which ms the expression of *real* relation to other beings. In Leibnitz's ory the 'eternal' and 'necessary' truths of reason are in substance principles of all knowledge, and furnish accordingly not only the und-principles of the formal sciences, like Logic and Mathematics, but o of Metaphysics and Ethics" (Schaarschmidt).

PAGE 44, line 9 from bottom, "The same reasons hold good." *Cf.* S. Reimarus, 1694–1768, *Allgemeine Betrachtungen über die Kunst- be der Thiere*, 1760, 4th ed. 1798, chap. 2, who, says Schaarschmidt, treated the antithesis between the knowledge of man and brute, investigation of which in our times has led to interesting contro- sies, better than most of the later writers. Leibnitz assumes a specific erence between the souls of brute and man, and does not at all agree h Descartes' view that animals are living but soulless automata. On mal intelligence, *cf.* Romanes, *Animal Intelligence* [International Sci- ific Series, Vol. 44, D. Appleton & Co., New York, 1st ed. 1883, 2d ed. 6]; *Mental Evolution in Animals*, New York, 1884, D. Appleton & Co.; n. Wundt, *Lectures on Human and Animal Psychology*, translated m the 2d German edition, by J. E. Creighton and E. B. Titchener, idon and New York, 1894, Lectures 23, 24, pp. 340–366. Wundt's tures include some criticism of Romanes, as somewhat wanting in ical attitude and exhibiting too much sympathetic imagination.

PAGE 45, line 6 from bottom, "Intellectual ideas." Intellectual, *i.e.*
opposed to "sensuous" (*i.e.* belonging to, or arising from, the senses
Leibnitz means to say, says Schaarschmidt, either we fasten our attenti
upon sense-pictures, whose source is sense-perception, or upon intelle
ual, *verstandesmässigen* (formulated, *sprachgeformten*), ideas, thougl
pictures, for whose rise those general ideas, which Kant called Kategori
or original notions of the understanding, are requisite; general ide
which do not arise from experience through the senses, but must belo
to our understanding as such and therefore be considered as "innate"
"implanted."

PAGE 46, line 18, "Virtual." *I.e.* Potential, or, as opposed to "actual
the real-possible. "It is here," says Schaarschmidt, "the faculty throu
which a substance (the soul) out of its own supreme power goes over in
a new condition as for it a new realization. Our soul contains an unen
ing number of possible ideas, as capacities, seeds or traces left behind a
remains of former activity, which upon definite occasion it realizes, *i.*
calls into consciousness. This Leibnitzian application of the — original
wider — Aristotelian concept of power to the soul has become for mode
philosophy in the highest degree weighty and fruitful."

PAGE 46, line 7 from bottom, "Reminiscence." On the Platonic do
trine of "reminiscence" or "recollection" (ἀνάμνησις), an essential pa
of his *doctrine of Ideas*, *cf.* Windelband-Tufts, *Hist. of Philos.* pp. 11
119; Zeller, *Philos. d. Griech.*, 4th ed. 1889, II., 1 [Vol. 3], 823, 82
835, 836.

In Plato's philosophy the ideas which are the objects of our ration
thought were intuited by the soul in its pre-existent and exalted sta
when it dwelt in the presence of the archetypal forms (παραδείγματα
which Plato called *ideas* (εἴδη or ἰδέαι). The soul in its earthly life
but dimly, if at all, conscious of these archetypal forms, till the perce
tion of their imperfect copies in corporeal things arouses the slumberi
recollection and stimulates the soul to reproduce them in consciousne
and with the aid of dialectic again to attain the knowledge of true a
ideal reality. *Cf.*, also, *New Essays*, Book I., chap. 1, § 5, Th. (3), *infr*
p. 79

PAGE 47, line 8, "Reflection." "Provided," as Schaarschmidt say
"that Reflection, which with Locke has to do only with the activities
the inner nature as such, receives that further content which embrac
the 'eternal' and 'necessary' ground-truths, and to which we are in fa
led if we keep in mind the presuppositions and modalities under whi
those activities proceed."

PAGE 47, lines 18, 19, "The book of Boyle against absolute rest." (
infra, p. 324, note 2. The treatise is also found in Vol. 1 of the Lat
version of his works, *Opera varia*, Geneva, 1680, and later, with the ti
Dissertatio de intestinis motibus particularum solidorum quiescentium,
qua absoluta corporum quies in disquisitionem vocatur. On Boyle,

switz, *Gesch. d. Atomistik*, 2, 261–293; Lange, *Gesch. d. Materialis-* , 2d ed. Iserlohn, 1873. 1, 255; English translation, Boston, 2d ed. , 1, 299–306.

AGE 47, line 21, "Doing away with atoms." Leibnitz rejects atoms avor of his own monads, because the monads contain in themselves the ciple of motion as active force, while the atoms are assumed in conse- nce of a force in movement foreign to them. On Leibnitz's view and levelopment, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 470 *sq.*

AGE 48, line 7 from bottom, "Confused in the parts." *Cf. infra*, 120, 317, note 2, 319, 320, 458, 459. Leibnitz's doctrine of "minute eptions" or, in the philosophical language of to-day, "unconscious tal states," is of the greatest significance in psychology and episte- ogy, and never more so than at the present time. For an excellent osition of it, *cf.* Windelband-Tufts, *Hist. of Philos.*, pp. 423 *sq.*, 462 *sq.*

AGE 48, last line, "Hippocrates." *Cf. infra*, p. 476, note 2.

AGE 49, line 15, "Sufficiently distinguished." That is, to reach con- usness. The perceptions are not sufficiently strong to call forth a scious activity of the soul.

AGE 49, line 12 from bottom, "Author of the most excellent of dic- aries." The reference is to Bayle. *Cf. infra*, p. 507, note 1.

AGE 49, note 1. The note should read: *Cf.* Vergil, *Georg.* IV., 393. hardt's reading: "que" is evidently a typographical error. Erdmann Janet read: "*quæ* mox futura," etc.; Jacques, correctly: *quæ* mox *ura* trahantur."

AGE 50, line 15, "Pneumatology." *Cf. infra*, p. 362, note 2.

AGE 50, line 20, "*Law of Continuity*." *Cf. infra*, p. 334, note 1; 52.

AGE 50, note 3. Add: The correspondence of Leibnitz and Basnage und in Gerhardt, *Leibniz. philos. Schrift.*, 3, 73 *sq.*

AGE 51, line 7, "*Numero*." *Cf.*, also, *infra*, p. 332, note 1.

AGE 51, lines 11–13, "Perfect globes of the second element, born of s perfect and original." The reference is to Descartes, *Principiæ osophiæ*, Pt. III., §§ 48 *sq.* *Cf.*, also, *New Essays*, *infra*, p. 552, 1. Mahaffy, *Descartes*, Blackwood's Philosophical Classics, Edin- h, 1881, p. 159, says Descartes' theory of general physics was elabo- d as regards minerals. This fact perhaps accounts for Schaarschmidt's slation: "des sichtbaren Metalls" and his reference to *Prin. Philos.*, IV., §§ 70, 75, in his note, *Erläuterung*, 400, p. 101, to the passage, *Essays*, Bk. IV., chap. 16, § 12, Th., p. 532 of his German transla- Descartes, says Mahaffy, *ibid.*, p. 159, gave special explanation f the growth of the human body, but that of plants and the lower nals was wanting when he died. On Descartes' theory, *cf.* Lasswitz, *h. d. Atomistik*, 2, 89.

PAGE 51, lines 19, 20, "Present considerations." While the process abstraction allows us, in order to their better apprehension, to conc trate our attention for the time on certain properties or attributes o subject to the exclusion of others, yet we must remember that in so doi we are departing from reality and only partially representing it in c sciousness.

PAGE 51, line 20. Instead of the rendering: "If it were very w understood," read, after Schaarschmidt, "If we take it as pure a simple gospel," etc.

PAGE 51, line 29, "Some exception." Nature gives us no perf circles, perfect spheres, etc. Perfect mathematical regularity of fo exists only in thought.

PAGE 52, line 7 from bottom, "Strong-minded." That is, the "Fr thinkers," as Leibnitz at other times called them, who thought they mi deny immortality itself after the pretended proofs for it given by Schol ticism had been disproved.

PAGE 53, line 8 from bottom, "Averroists and some bad Quietists *Cf. infra*, p. 581, note 1. The Mystics and Quietists approached ve nearly this Averroistic doctrine of a denial of personal immortality. Leibnitz's time the Mystics and Quietists were especially the followers Madame Guyon, who was ready "to burst from an overplus of divi grace," and of Ant. Bourignon, on whom *cf. infra*, p. 599, note 2; al according to Schaarschmidt, Leibnitz's letter CXLIV., Feder, *Commen epistolici Leibnitiani*, Hanover, 1805, p. 459.

PAGE 54, note 1. Add: Leibnitz was much interested in the Loc Stillingfleet controversy, as his correspondence with Thomas Burn shows. *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 3, 149–329, *passim*, a especially pp. 205, 216, and the two essays, pp. 223–242; also Fouc de Careil, *Lettres et opuscules inédits de Leibniz*, Paris, 1854, Introd tion, pp. lxii *sq.*, and Leibnitz's *Remarques sur le Sentiment de M. Worcester et de M. Locke*, *ibid.*, pp. 1–26. The latter piece is identi with that published — not therefore for the first time — by Gerhardt, *cit.*, 3, 229–242. The controversy, like that of Leibnitz and Arnau served to bring Locke to the further explication and limitation of views.

PAGE 55, lines 16, 17, "French version." That is, by Pierre Cos with the co-operation of Locke. It appeared in 1700, then in 1729, a again in 1742. *Cf. ante*, p. 4, note 1. For the correspondence of Le nitz and Coste, *cf.* Gerhardt, *Leibniz. philos. Schrift.*, 3, 377–436. Bef Locke published, in 1690, his Essay, he published an abstract, transla into French by Le Clerc in Le Clerc's "Bibliothèque universelle," Ja ary, 1688. *Cf. ante*, p. 4, note 1, and Fraser's *Locke's Essay*, 1, note 2. The abstract or "Epitome" is found in Lord King's *Life Correspondence of Locke*, new ed., London, 1830, 2, 231–293; Bohn's e 1858, 1 vol., pp. 365–399.

Page 55, last line, "Intentional species." *Cf. infra*, p. 381, note 1.

Page 56, line 3. For the Latin verse, *cf.* Ovid, *Tristia*, I., 8, 7.

Page 59, line 4 from bottom, "Inexplicable qualities." That is, the *alitates occultæ* of the mediæval philosophers.

Page 60, line 6 from bottom, "Instructive." Leibnitz, as Schaar- hmidt says, "avails himself of Stillingfleet's polemic against Locke, hich is of particular interest because it shows Locke's uncertainty in gard to the weighty question of the substantiality of the soul, to add ereto the statement that the soul must be immaterial. Locke himself, he argues, has admitted that thought is not conceivable as a modifica- n of matter, or that, in other words, a thinking being cannot be a mere echanism; thus the soul is to be considered as something immaterial, ice the thought, that God may through a miracle have bestowed thought on matter, is an unpermissible subterfuge." For further discussion of e point, *cf. New Essays*, Bk. IV.

Page 62, line 10 from bottom, "Miracle pure and simple." *Cf. infra*, 428. The doctrine of a purifying fire through which souls have to pass ter death goes back to the early period of the church, but became more ominent and was more generally adopted from the time of Gregory the reat (c. 540–604). *Cf.* Hagenbach, *Hist. of Doctrines*, ed. H. B. Smith, 141, Vol. 1, p. 373; § 206, Vol. 2, p. 126. Clement of Alexandria, *Stro- ateis*, vii., 6, says: *φαμὲν δ' ἡμεῖς ἁγιάζειν τὸ πῦρ, οὐ τὰ κρέα, ἀλλὰ τὰς αρτωλοὺς ψυχάς· πῦρ οὐ τὸ πάμφαγον καὶ βάναυσον, ἀλλὰ τὸ φρόνιμον γοντες, τὸ διϊκνούμενον διὰ ψυχῆς τῆς διερχομένης τὸ πῦρ*, *i.e.* "We say that re sanctifies not flesh, but sinful souls, speaking of that fire which is ot all-devouring, such as is used by artisans, but of that which is dis- iminative, pervading the soul which passes through the fire" (the phrase discriminative" (*φρόνιμον*), or as Bigg, *The Christian Platonists of lexandria* [Bampton Lectures for 1886], p. 113, translates it, "wise fire," comes," says Bigg, "from Heraclitus and the Stoics.") *Cf.* Bigg, *op. it.*, 295; Hagenbach, *op. cit.*, § 77, 1, 222. And Augustine, *De Civit. ei*, Bk. XXI., chap. 10, Benedictine ed., Paris, 1685, Vol. 7, p. 631, ys: "Cur enim non dicamus, quamvis miris, tamen veris modis etiam piritus incorporeos posse pœna corporalis ignis affligi, si spiritus homi- um, etiam ipsi profecto incorporei, et nunc potuerunt includi corporali- us membris, et tunc poterunt corporum suorum vinculis insolubiliter lligari?" *i.e.* "For why may we not assert that even immaterial spirits ay, in some extraordinary way, yet really be pained by the punishment f material fire, if the spirits of men, which also are certainly immaterial, re both now contained in material members of the body, and in the vorld to come shall be indissolubly united to their own bodies?" (*The ity of God*, 2, 435, translated by Rev. Marcus Dods, M.A., T. & T. Clark, dinburgh, 1871). In chapter 7, after having in previous chapters cited nany real or supposed facts from the natural world in support of the pos- ibility at least of the view, he admits that it is miraculous and beyond our knowledge, and maintains the omnipotence of God as the ultimate rea for belief in miracles. Thos. Aquinas, *Summa Theol.*, Quæst. 70, Art Concl., says: "Respondeo: Dicendum quod ignis inferni [*i.e.* purga rial fire, according to the context] non sit metaphorice dictus, nec ig imaginarius, sed verus ignis corporeus," etc. Only those requiring pur tory go there, according to St. Thomas, *cf.* Quæst. 69, Art. 2. Bellam 1542–1621, in his *De Purgatorio*, chaps. 10–12, investigates the meth of the purgatorial fire and follows Augustine in teaching that it is ma rial and miraculous in its action upon the soul.

Page 63, line 10 from bottom, "Demons or goblins." "Leibnitz perhaps here thinking," says Schaarschmidt, "of the so-called Spirits the Elements (*Elementargeister*), of which the 'philosophers and phy cians of the past,' especially Theoph. Paracelsus [*cf. infra*, p. 645, note had treated, both in his *Philosophia sagax*, and in a special book, *nymphis, sylphis, pygmæis et salamandris*, or even of the '*spiritus fam aris*' of others, as of the Italian philosopher and physician Hieronym Cardanus [*cf. infra*, p. 566, note 1], who in his interesting autobiograp [*De vita propria*], chap. 47, discusses the subject and at the same ti narrates marvellous experiences of his own past life."

Page 63, note 3. Add: In the *Philos. Mosaica*, and also in *Utriusque Cosmi — Metaphysica, physica atque technica Historia*, Oppe heimii, 1617 fol., "God appears," says Schaarschmidt, "as the a mating and moving principle of things, in that all power streams fo in a miraculous way from him into matter, in order afterwards to tu back again from the thereby occurring differentiation to unity." (Fludd, *cf.* Lasswitz, *Gesch. d. Atomistik*, 1, 329; Stöckl, *Gesch. d. Phil d. Mittelalters*, III. [Vol. 4], 472–476.

Page 64, note 1. Add: Prof. A. C. Fraser, in his edition of Lock *Essay concerning Human Understanding*, Oxford, 1894, follows Coste French version in separating the introductory chapter from the First Boo and making, with Leibnitz here, but three chapters in Bk. I.

Page 64, note 2, line 2. After "1674," add: new ed. with notes Bouillier, Paris, 1880, 2 vols.; line 4, after "Bernier," add: On Gassend *cf.* Stöckl, *Gesch. d. Philos. d. Mittelalters*, III. [Vol. 4] 316–327; Lang *Gesch. d. Materialismus*, 2d ed., Gerlohn, 1873, 1, 223–234, Eng. trans. ed. 1, 253–269; Lasswitz, *Gesch. d. Atomistik*, 2, 126–188. On Bernier later divergence from Gassendi, *cf. ibid.* 2, 504.

Page 65, line 13. Instead of "Doctors," read: "scholars."

Page 65, note 1. Add: Lady Masham, 1659–1708, was one of Locke most intimate and truest friends, kept him by her at her country seat Oates and nursed him in his last illness. *Cf.* Gerhardt, *Leibniz. philo Schrift.* 3, 365. Lady Masham presented Leibnitz with a copy of he father's *Intellectual System*, as appears by his letter of March 29, 1704, c Gerhardt, 3, 338.

Page 65, note 3. Add: The objections referred to in the text are the *jectiones quintæ* against Descartes' *Meditationes de prima philosophia,* which indeed," as Schaarschmidt says, "contain a series of very acute jections and gave Descartes much trouble." The *Cinquièmes Objec-ms* of "Gassendy," with the *Réponses* of Descartes thereto, are found Cousin, *Œuvres de Descartes,* 2, 89 *sq.*, 241 *sq.*

Page 66, line 6, "Inclined towards ethics." Leibnitz, who to a certain tent may be considered as giving utterance to his own views in the rson of Theophilus, here throws out a hint to be well taken to heart as gards his own course of development. As a natural consequence of his rly studies in jurisprudence, Leibnitz was led to a deeper study of ethical nceptions, and in like manner his study of Descartes made him quainted with the problems of mathematics and physics, which he oroughly examined only later after his sojourn in Paris.

Page 66, lines 13, 14, "No longer a Cartesian." *Cf.* the entire context,). 66–69, also Leibnitz's letter to Remond de Montmort, January 10, '14, Gerhardt, *Leibniz. philos. Schrift.* 3, 606–607, Erdmann, 701–702, in hich Leibnitz gives a brief account of his own philosophical studies and evelopment, including, Plato, Aristotle, and the Scholastics and thence issing to the moderns, rejecting the "substantial forms" for the mechan-m of the Cartesian system, and then developing his own doctrine of Pre-stablished Harmony. The difficulties and controversies within the artesian School and against it led Leibnitz to his own doctrine, and he marks in his *Considérations sur le Principe de Vie,* 1705, Gerhardt, 6, 10, Erdmann, 430, as also in the letter here cited, that if Descartes had nown that Nature conserves not only the same force, but also the same tal direction in the laws of motion, he would himself have come to the ystem of pre-established harmony. *Cf.* W. Sigwart, *Die Leibniz'sche ehre v. d. prästabilirten Harmonie.* Tübingen, 1822, pp. 110–112, 117, 18, 121, 132, etc. For Leibnitz against Descartes and Cartesianism, *cf.* erhardt, 4, 265–406; also, Stein, *Leibniz u. Spinoza,* 60 *sq.*

Page 66, line 17, "New System." That is, The System of Pre-stablished Harmony, in explanation and defence of which Leibnitz ublished in the journals mentioned many essays, most, if not all, of which re mentioned later in either the text of the *New Essays* or notes thereto. Leibnitz," as Schaarschmidt well says, "can truly boast that he has rned to account for his own system moments of all the doctrines named the text," it being "a characteristic feature of Leibnitz's thought to scribe a relative truth to each philosophic system and accordingly to wish extract from it a good side in order, by harmonizing these different lements, to bring to pass the possibly best view of the world." *Cf.* eibnitz's letter to Remond de Montmort, January 10, 1714, Gerhardt, *eibniz. philos. Schrift.* 3, 606, Erdmann, 701: "Outre que j'ay eu soin e tout diriger à l'édification, j'ay taché de déterrer et de réunir la vérité nsevelie et dissipée sous les opinions des differentes Sectes des Philosophes, et je crois y avoir adjouté quelque chose du mien pour faire quelques en avant."

PAGE 66, note 1. Add: Geronimo Rorario, 1485–1566, an Ital littérateur, Nuncio of Clement VII. at the Court of Ferdinand, King Hungary, maintained, against the Cartesians and the followers of Aristo that the beasts have reason and make better use of it than man. His bo *Quod animalia bruta sæpe ratione utantur melius homine*, appeared fi in 1648, then 1654 at Amsterdam.

PAGE 67, lines 3, 4, "Life and perception in all things." The doctr of the universal soulhood (*Allbeseeltheit*) goes back to the world-soul Plato, as developed especially by Plotinus (*cf.* Windelband-Tufts, *Hist. Philos.*, 245 *sq.*), and is connected in part therewith, and partly with t pantheistic tendencies represented, for example, by the Averroists (*New Essays*, *infra*, p. 581, note 1). Leibnitz rejects both errors by Monadology, which conceives the universal soulhood of substances in individual and not in a pantheistic way. In modern times the doctri appears in Giordano Bruno, 1548–1600 (*cf. Della Causa*, Vol. II., pp. 2 241, ed. A. Wagner, Leipzig, 1829, new ed. by P. de Lagarde, 2 vol Göttingen, 1888, German trans. by Lasson, Berlin, 1872, in J. H. v. Kir mann's *Philos. Bibliothek*, Vol. 53), and in Jacob Boehme (*cf. inf* p. 298, note 1). On the doctrine as found in Bruno and Boehme, Windelband-Tufts, *op. cit.*, 367 *sq.*, 373 *sq.* Spinoza, *Ethica*, Pt. Prop. XIII., Scholium, ed. Van Vloten and Land, 1, 86–88; Elw trans., 2, 92, also gives expression to the same thought.

PAGE 67, line 5, "Countess of Connaway." Anne — Viscountess C way — died Feb. 23, 1678–9, was a metaphysician and an earnest stud of Plato, Plotinus, Philo Judæus and the "Kabbala Denudata." In sp of never-ceasing sufferings from a severe headache lasting till her dea she pursued her metaphysical studies with extraordinary devotion a assiduity. Her physician, Francis Mercury van Helmont (*cf. infra*, 2 note 2), encouraged her in this course. She was very friendly with More and corresponded with him on philosophical and theological topi She wrote many works of which only one has been printed: *Opusc philosophica quibus continentur principia philosophiæ antiquissimæ recentissimæ*, Amsterdam, 1690. It was the first in a collection of phi sophical treatises appearing in Latin in that year at Amsterdam, transla as "a work by a certain English countess, 'learned beyond her sex, and ascribed by Leibnitz in a German literary journal, on the authority Van Helmont, to the Countess of Conway. The treatise was re-tra lated into English and published with the title *The Principles of the M Ancient and Modern Philosophy*, etc., London, 1692, 8vo.

PAGE 67, note 1. Add: On Campanella, *cf.* Stöckl, *Gesch. d. Philos Mittelalters*, III. [Vol. 4.], 343–366; Lasswitz, *Gesch. d. Atomistik*, 1, 3 342.

PAGE 67, note 2. Add: On Van Helmont, *cf. infra*, p. 242, note 2; H. More, *cf. infra*, pp. 380, note 1; 382, note 2, and addition ther *infra* p. 768.

Page 67, note 3. Add: Further references to Archæus in Leibnitz's itings are: *Specimen Dynamicum*, Gerhardt, *Leibniz. math. Schrift.*, , 2 [Vol. 6], 242, also *infra*, Appendix, p. 679; *Hypothesis phys. nova, eoria motus concreti*, § 60, Gerhardt, *Leibniz. philos. Schrift.* 4, 217; *th. Schrift.*, II., 2 [Vol. 6], 57; Dutens, *Leibnit. op. om.*, 2, Pt. II., ; *Leibnit. Animadversiones circa Assertiones aliquas Theoriæ Medicæ æ Clar. Stahlii*, Dutens, *op. cit.*, 2, Pt. II., 136. *Cf.*, also, Windel- nd-Tufts, *Hist. of Philos.* 371 *sq.*

Page 68, line 10, "*Morte carent animæ.*" *Cf.* Ovid, *Metamorphoses*, 158.

Page 68, line 20, "Spontaneity." Leibnitz ascribes absolute spon- eity to the soul, to which the activity of the body perfectly corresponds ough the Pre-established Harmony, and therefore neither influences r disturbs it.

Page 68, line 7 from bottom, "Epitome." That is in the Monad, each nad representing in itself and to itself the entire universe. Leibnitz nstantly recurs to this thought, which is one of the chief points of his stem. *Cf. Système nouveau de la nature*, § 16; *Monadologie*, § 65, etc.

Page 69, note 1. Add: also G. Croom Robertson, *Philos. Remains*, illiams & Norgate, 1894, pp. 334–342.

Page 70, line 5 from bottom, "Copernicans." Kant, later in the eface to the 2d ed. of his *Kritik d. reinen Vernunft*, makes use of the ne comparison of Copernicus.

Page 71, line 24, "Confused perceptions." *Cf. ante*, p. 48 and note to e 7 from bottom, *ante*, p. 727. "While Leibnitz," says Schaarschmidt, ften returns to this antithesis of truths of reason and of fact, he has fortunately nowhere given accurate definitions of the former, nor any olly satisfactory criterion of a truth of reason. Kant first undertook s task, in that he certainly on the one side significantly restricted the vice of the truths of reason, on the other, that against Leibnitz he ognized that for the reason as such complete (*fertige*) concepts are to se out of the truths of reason."

Page 72, note 1. Add: "The Later Arminians," says Schaarschmidt, re here referred to, as the leaders of this religious sect, such as Episco- us, Limborch, J. Clericus, like Descartes and Leibnitz himself, assume nowledge of God derived from natural reason."

Page 74, line 8 from bottom, "Natural light." *Cf. infra*, pp. 575–576, te 1.

Page 74, lines 4, 3, from bottom, "Verification." *Cf. ante*, p. 71, note t line 24, above, and also *New Essays*, Bk. IV., chaps. 9, 11. Leibnitz re presents as the criterion or test of innate ideas their immediacy in sciousness. Spinoza before him (*Ethica*, Pt. II., Prop. 43, Scholium, *fin.*, ed. Van Vloten and Land, 1, 111; Elwes' trans., 2, 115; *cf.*, also, Pollock, *Spinoza, his Life and Philosophy*, 129 *sq.*), said: "Sane sicut lux seipsam et tenebras manifestat, sic veritas norma sui et falsi est *Cf.*, also, Descartes, *Prin. Philos.*, Bk. I., § 45; ed. Cousin, 3, 90; Veitcl trans., 212, where he sets forth the doctrine of "clear and distinct knowledge and of intuition through which we become immediately cc scious of the truth as such. *Cf.*, also, Descartes, *Regulæ ad direction ingenii* (*Règles pour la direction de l'esprit*), *Opuscula posthuma Cartes* Amsterdam, 1701, III., p. 6; IV., p. 9; VI., p. 14; ed. Cousin, 11, 2(215, 226.

Page 75, note 1. *Dele* note. The Ludolph here referred to by Leibn is Ludolph van Ceulen, or Keulen, 1539–1610, Professor of Military Arc tecture in the University of Leyden since 1600, and previously teacher mathematics in Breda, Amsterdam, and Leyden. He published his *V de Circkel, daarin geleert wird te finden de næste proportie des Circke diameter tegen synen Omloop*, Delft, 1596; Latin trans. by Snellius, e titled *De circulo et adscriptis*, 1615. His *De arithmetische en geometris fondamenten*, etc., Leyden, 1616. *Fundamenta arithmetica et geometri* and *Zetemata* (*seu Problemata*) *geometrica*, both trans. from the Dut by Snellius, Lugd. Bat., 1615. He computed the ratio of the diame to the circumference of the circle to 35 places of decimals. The ra is commonly known in Germany by the name "Ludolphische Zahl Leibnitz refers to him in his mathematical writings, *cf.* Gerhardt, *Leibn math. Schrift.* II., 1 [Vol. 5], 95, 119. For Leibnitz's discussions of t subject, *cf. infra*, p. 424, note 2.

Page 77, line 6 from bottom, "*Subvenire.*" Schaarschmidt transla "Beikommen," and in his note to the passage states that "the Fren *souvenir* (to remember) made from *subvenire*, originally means: to co to the aid of. The expression of help introduced by the Herbartian p losophy could, unfortunately, not be used, since the word-play would wholly lost."

Leibnitz's thought is that *reminiscence*, the active and voluntary fac in the reproduction of the past and in bringing the now unconsci knowledge again into consciousness, requires and receives the aid *remembrance* or memory, the conservative factor in the process, which some unknown and mysterious way, and out of consciousness, preser as in a store-house the knowledge previously acquired or possessed. Hamilton, *Metaphys.*, Lect. 20, pp. 274–275, American ed., Boston, 18

Page 78, line 16 from bottom. The sentence should read thus: "I through an admirable arrangement of nature we cannot have abstr thoughts which do not require something sensuous, although this shou consist only of such characters as are the forms of the letters and t sounds."

Page 79, line 8 from bottom, "Opinion of the Platonists." *Cf. an* p. 46, and note to line 7 from bottom, *ante*, p. 726.

Page 80, note 1. Add: Janet also reads: "ou." Schaarschm translates "wo," *cf.* his translation, p. 45, line 13 from bottom. T text seems to require here the reading “où,” where. The reading u” is probably a MS. or typographical error.

AGE 83, note 1. Add: For an account of his views, *cf.* Lasswitz, *sch. d. Atomistik*, 2, 188–207. Digby’s doctrine on the subject menned in Leibnitz’s text is found in his *Demonstratio immortalitatis mæ rationalis*, Tract. I., cap. 3, p. 26 *sq.*, ed. Francofurti, 1664, full e of which Lasswitz gives, *op. cit.*, 2, 188, note 3; and in his *Institunes peripateticæ*, published as an Appendix to the *Demonstratio*, ed. 1664. Schaarschmidt gives 1st ed. of *Demonstratio*, Paris, 1655. *A atise of the nature of bodies*, Paris, 1644.

AGE 86, line 8, “Sadness is.” Says Schaarschmidt: “We are immetely conscious of the theoretical ground-truths as such. With the ctical, the case is different. Joy and sorrow we certainly feel immedily as such, but to find out their real nature requires subsequent reflecn.”

AGE 87, note 2. After “Erdmann,” add: Janet; and after “Bohn’s tion,” add: Fraser’s *Locke’s Essay*, 1, 67, line 18.

AGE 88, line 13 from bottom, “*Instinct.*” “Leibnitz understands e by instinct,” says Schaarschmidt, “a definite inclination to a certain nner of action, which arises out of need and serves to satisfy the same. uths of instinct’ thus refer themselves back to our nature and are ordingly, in conformity with Leibnitz’s general view, innate truths.”

AGE 89, note 2. Add: A German translation, by G. E. Böttger, apred at Nordhausen, Gross, 1787.

AGE 89, note 3. Add: According to Schaarschmidt, the story is found Bk. II., chap. 1, p. 73, of Baumgarten’s, “very interesting but rare,” *igrinatis in Ægyptum, Arabiam, Palæstinam et Syriam*, Noribergæ off. Gerlachiana, p. P. Kaufmannum, 1694, 4to.

AGE 91, line 5, “*esse.*” *Cf.* Digest or Pandects, Bk. I., Tit. 1, § 3, ere Florentinus says: “Ut vim atque injuriam propulsemus. Nam e hoc evenit, ut quod quisque ob tutelam corporis sui fecerit, jure sse existimetur, et, cum inter nos cognationem quandam natura conuit, consequens est hominem homini insidiari nefas esse.” *Corpus ris Civilis Academicum Parisiense*, p. 229, 7th ed., Lutetiæ Parisiorum 2; *Corpus Juris Civilis* (*Digesta* recog. T. Mommsen, and paged separely), Berlin, Weidmann, 1893, Vol. 1, p. 1.

AGE 91, line 8 from bottom, “Complete certitude to morals.” Schaarmidt here compares Hume, “the most acute (*scharfsinnigste*) of the glish philosophers,” who “reached a similar result, wholly indepent of Leibnitz,” in his *An Inquiry concerning the Principles of Morals*, tion I., *cf. The Philos. Wks. of David Hume*, 4 vols., Little, Brown, & , Boston, 4, 233: “The final sentence, it is probable, which pronounces racters and actions amiable or odious, praiseworthy or blamable;

that which stamps on them the mark of honor or infamy, approbation censure; that which renders morality an active principle, and constitu virtue our happiness, and vice our misery; it is probable, I say, that t final sentence *depends on some internal sense or feeling, which nature made universal in the whole species*. . . . But in order to pave the w for such a sentiment, and give a proper discernment of its object, it often necessary, we find, that much reasoning should precede, that n distinctions be made, just conclusions drawn, distant comparisons form complicated relations examined, and general facts fixed and ascertaine *Cf.*, also, Hume, *A Treatise of Human Nature*, Bk. III. *Of Mora* Pt. I., Sect. II., ed. Green and Grose, 2, 247.

Page 91, line 3 from bottom, "Boutan." That is, Bhután, a distr in the Eastern Himalayas, north of Assam.

Page 92, line 6, "Often confused." "Feeling here means," as Scha schmidt says, "not the sensuous-psychical sensation, but the confu complex of presentations (*Vorstellungen*) — a frequently used signifi tion of the term — which occupies the soul and therefore often drives it action. Feelings of this kind may by self-reflection be resolved into m or less clear and distinct ideas (*Vorstellungen*), a process necessary testing and correctly estimating their content. Leibnitz at this ti appears to regard all feelings without exception as such undevelo ideas and judgments."

Page 93, line 20, "Joseph Scaliger." *Cf. infra*, p. 106, note 2.

Page 95, note 1. Add: The five principles here referred to are fou in the *De Veritate*, and in the *De Religione Laici*, annexed to the 3d London, 1645, of the *De Verit*. *Cf.* Fraser's *Locke's Essay*, 1, 80, note 81, note 1.

Page 96, note 1. After "*ad init.*," add: 15, Berlin Academy ed., 11 36: *ἔστιν, ἄρα ἡ ἀρετὴ ἕξις προαιρετικὴ ἐν μεσότητι οὖσα τῇ πρὸς ἡ ὡρισμένῃ λόγῳ καὶ ὡς ἂν ὁ φρόνιμος ὁρίσειεν· μεσότης δὲ δύο κακιῶν, τῆς καθ' ὑπερβολὴν τῆς δε κατ' ἔλλειψιν . . . διὸ κατὰ μὲν τὴν οὐσίαν καὶ λόγον τὸν τί ἦν εἶναι λέγοντα μεσότης ἐστὶν ἡ ἀρετή, κατὰ δὲ τὸ ἄριστον κα εὖ ἀκρότης.*

Page 97, note 1. Add: A long time after this note was in type came across the following in Guhrauer, *Leibnitz's Deutsche Schriften* 509, among some *Vermischte Bemerkungen und Urtheile . . . Aus Monatlichen Auszuge*: "(October, 1701). Herr *Boileau Despreaux*, französischer Academicus und berühmter Satyricus, hat eine neue vermehrte Edition seiner Satyren machen lassen, und denselben sei Namen vorgesetzt, und dabey zu verstehen gegeben, dass er diese keine andere Edition vor die *seine* erkenne." Possibly the edition referred to contained the lines as Leibnitz gives them, the author cha ing them in later editions.

Page 99, lines 7–9. *Cf. ante*, p. 66, and note to line 17, *ante*, p. 73

AGE 99, note 1. Add: The *Chronicon*, 379–468, is also found in Bouquet, *Rec. hist. Gaules*, new ed., Paris, 1869–1880, 19 vols., fol., l. 1, p. 612; A. Duchesne, *Hist. Franc. Script.*, 1, 183; Migne, *Patrol. at.*, 74, 675.

AGE 100, lines 16, 17. "The knowledge of being is wrapped up in t knowledge which we have of ourselves." *Cf. New Essays*, Bk. II., p. 27, § 9, Th., *infra*, pp. 245 *sq.*, and note to p. 247, lines 7–9, *infra*, 760. Also Kant's doctrine of the categories, to which Leibnitz's ught at this point is very closely related. Our self-consciousness gives an immediate knowledge of being, *i.e.* of our own particular being, not yet the concept of being or substance in general nor any "eternal th." What is given is an internal experience, whose essential and essary content, implications and full significance are reached only after found and protracted thought.

AGE 101, note 1. The following changes or corrections are to be made this note: In line 23, instead of "Appendix," read: Duncan, 37–40; line 25, after "*Math. Schrift.*, 6, 234 *sq.*," insert: trans., Appendix, ra, pp. 670–692; in line 27, instead of "Appendix," read: Duncan, -80; in line 28, instead of "Appendix," read: Duncan, 112–126; in e 30, *dele* "trans., Appendix"; line 5 from bottom, "As Leibnitz was upied," etc., *cf. infra*, p. 531, note 2, ¶¶ 2, 3. The statement made these two notes would probably more nearly represent the truth in the tter if made thus: "As Leibnitz was occupied with the composition his 'New Essays' from 1700–1704, and with their revision until the l of 1707, and perhaps later (*cf.* Gerhardt's Introduction to the 'New says,' *ante*, pp. 8, 9, and Leibnitz's Correspondence with Coste, Gerrdt, *Leibniz. philos. Schrift.*, 3, 377 *sq.*, especially 391–400) the relative te," etc.

PAGE 103, line 7, "Witsen." Nicolas Witsen, c. 1640–1717, Dutch bassador at the Russian Court, alderman and burgomaster at Amsterm, published *Architectonica nautica nov-antiqua*, Amstelod., 1671; *ord-en Oost-Tartarye, met Landkaerten, beschreven, getekent*, etc., vols., fol., *ib.*, 1692 and 1705. For Witsen's correspondence with ibnitz, *cf.* Dutens, 6, Pt. II., 199–203; Foucher de Careil, *Œuvres de ibniz*, 7, 450, 453–459, 464.

PAGE 103, line 8, "Barantola." The old name for Lhasa, the capital Thibet. *Cf.* Dutens, 6, Pt. II., p. 201.

PAGE 103, note 2. Add: Chap. 3 in Fraser's *Locke's Essay*.

PAGE 103, note 3. Add: Fraser's *Locke's Essay*, 1, 99.

PAGE 105, note 1. Add: *Cf.* Fraser's *Locke's Essay*, 1, 109. Fraser mbers 21, and states in his note that the section was added in the cond edition

PAGE 108, note 2, line 5 from bottom. Instead of "Vol. 3," read: I., 2 [Vol. 6].

Page 109, note 2. *Cf. ante*, p. 733, note to p. 68, line 7 from botto
Leibnitz regards each monad, and especially the human soul, as a mirr
of the universe. So far as the ideas are clear and distinct, the soul e
presses the picture of the ideal universe existing in the mind of God
the “ best world ” and realized out of his goodness ; so far as they a
confused, the soul is like the phenomenal world in space and time.

Page 110, lines 18, 19, “ *Intrinsic connotations.*” The intrinsic, inn
activity of every “ substantial thing” determines its external activity a
relations to each and all other things. In Leibnitz's view, this activi
consists in representation or is conceived as analogous to representati
That is, all external change is apparent merely, depending upon that i
ternal change in the condition of substances which we call representati
and which is the real occurrence.

Page 112, line 11 from bottom, “Certain author.” Locke, Bk. I
chap. 1, § 10 (in Coste's translation, which, it will be remembered, w
the one used by Leibnitz as the basis of his critique, 4th ed., Amsterda
1742, p. 65, 4 vol. ed., Amsterdam, 1774, 1, 152), says: “ Car il s'
trouvé un Auteur qui ayant lû la première Edition de cet Ouvrage,
n'étant pas satisfait de ce que je viens d'avancer contre l'opinion de ce
qui soûtiennent que l'*Ame pense toujours*, me fait dire, qu'*une chose ce*
d'exister parceque nous ne sentons pas qu'elle existe pendent notre so
meil,” etc.; but he does not name the author referred to. In the Engli
editions of the Essay, for example, Bohn's, Vol. 1, p. 212 ; Fraser's, V
1, p. 129, Locke makes the reference general : “ How could any one ma
it an inference of mine,” etc. Philalethes rightly takes exception to t
opinion thus falsely imputed to the partisans of Locke.

Page 118, line 10 from bottom, “Beg the question.” Schaarschm
has put the argument in logical form thus : “ That of which we are
conscious is not in the soul ; We are often conscious of no ideas ; the
fore, We are often without ideas (or, therefore, often we do not thin
And he goes on to say that, the circle, of which Leibnitz speaks, consi
in the fact that he who so concludes has already put the conclusion
the major premise in assuming that to have no consciousness of ideas
the same as to be without ideas (*Nichtvorstellen*) or not to think (*Nic*
denken). The latter statement is false. One can have ideas, and act
ally does have them, without being directly conscious of his ide
(*Vorstellens*). Thus the major premise of that argument is false, a
therefore the conclusion likewise, while the minor is true. According
Leibnitz, substance is always active — is indeed action itself — thus a
the soul, since for him it is a substance, and since the proper activity
the soul is to have ideas (*das Vorstellen*), therefore the soul is alwa
having ideas (*vorstellend*).”

Page 118, note 1, line 2. After “Erdmann,” add : Janet.

Page 119, line 8 from bottom, “Independently of the senses.”
ante, p. 723, note to p. 42, line 10, *ad fin.*; p. 725, note to p. 44, line 1

733, note to p. 68, line 20. In accord with Leibnitz's principle of the olute spontaneity of substances, all activity, that of the soul as well, ings out of the depths of its own being.

PAGE 119, note 1, line 2. After "Erdmann," add: Janet.

PAGE 120, line 6, "*Ex professo.*" Schaarschmidt says the term *Ex fesso* is a technical expression occurring in classical literature (for mple, Seneca and Quintilian), which signifies: in a positive, precise y, in a pronounced or aforementioned manner. Leibnitz means to , hitherto have we each set forth and justified his own speculative nt of view (*erkenntniss-theoretischen Standpunkt*); now we come to consideration of some classes of ideas in which we shall more than herto agree with each other.

PAGE 120, note 1. After "Erdmann," add: Janet.

PAGE 121, note 1. After "Erdmann's," add: Janet's.

PAGE 122, lines 1, 2. "The membranes receive the sensation," etc. Leibnitz's letter to Arnauld, April, 1687 (Gerhardt, *Leibniz. philos. hrift.*, 2, 90, 91): "Les nerfs et les membranes sont des parties plus sibles pour nous que les autres, et ce n'est peutestre que par elles que us nous appercevons des autres, ce qui arrive apparemment, parceque mouvemens des nerfs ou des liqueurs y appartenantes imitent mieux impressions et les confondent moins, or les expressions plus distinctes l'ame repondent aux impressions plus distinctes du corps. Ce n'est que les nerfs agissent sur l'ame, à parler metaphysiquement, mais st que l'un represente l'estat de l'autre *spontanea relatione*," *i.e.* "The rves and the membranes are the parts more sensitive for us than the ers, and it is perhaps only by them that we perceive the others, which ppens apparently, because the movements of the nerves or of the fluids longing thereto imitate better the impressions and confuse them less, w the more distinct impressions of the soul correspond to the more tinct impressions of the body. Not that the nerves act upon the ul, to speak metaphysically, but that the one represents the state of other by reason of a *spontaneous relation*." Modern psychological estigation and experiment prove that the end-organs rather than the rves "receive the sensation," or, in modern phrase, 'are acted upon ectly by the stimulus,' the character of the sensation depending upon peculiar structure of these different end-organs, and not upon the rves. The formerly held doctrine of the "specific energy of the rves" as being the cause of specific sensations, or as 'accounting for quality of the sensation' — a doctrine which, according to Schaarmidt in his note to the passage (*Erläuterungen z. d. Neuen Abhandgen ü. d. menschlich. Verstand v. G. W. Leibniz*, Berlin, 1874, J. H. Kirchmann's *Philos. Bibliothek*, Bd. 56, Erläuterung, 92, p. 27) condicts Leibnitz's statement in the text, — is now given up. Leibnitz's tement, while partly true, is nevertheless incomplete. He is right in ting "that tastes make themselves known to some extent through the

nose, by reason of the connection of these organs," — modern experimen
having proved taste and smell to be interdependent in their action in se
sation, — but wrong as to the assistance of the teeth in the transmissi
of sound, the teeth not being ordinarily concerned in the process. If l
"membranes" Leibnitz meant "end-organs," his statement, with tl
exception of the part regarding the hearing, would be correct, and h
theory exhibit a remarkable degree of insight and foresight and of a
proximation to the modern view of the subject. But this interpretati
of his language seems on the whole inadmissible, "membranes" wi
him signifying probably the skin and the muscles, so that, while we m
not justly regard him as having attained the fulness and completeness
the modern understanding of the sensation-process, we may yet just
attribute to him a measure of insight into, and foresight of, what throu
subsequent investigation and experiment has been proved to be its tr
nature.

PAGE 122, Chap. IV., § 1, line 5, "Solidity." On Locke's idea
solidity, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 505–508.

PAGE 123, note 3. After "Erdmann," add: Janet.

PAGE 124, lines 9, 10 from bottom, "The scholastic conception of tl
air." *Cf. New Essays*, Bk. I., chap. 1, § 18, Th., *ante*, p. 83, lines 11, 1
On "rarefaction and condensation," line 12 from bottom, *cf.* Lasswit
Gesch. d. Atomistik, Vol. 1, *passim.*

PAGE 125, last line of text and note 1, "Animant." Some time aft
the text and note were in type, I came upon Leibnitz's letter to Leuwe
hoek, "Sur l'Aimant," *cf.* Dutens, *Leibnit. op. om.*, 2, Pt. II., 92–94.
the correspondence, in Latin, of Leibnitz with Des Bosses there is co
siderable allusion to the Magnet, *cf.* Gerhardt, *Leibniz. philos. Schrif*
2, 437 (Postscript to Letter of Leibnitz to Des Bosses, February 5, 1712
492–495, 497–498 (Leibnitz to Hartsoeker, April 29, 1715, in French
505, 513 (Response de Mr. Hartsoeker, in French). As from this corr
spondence it is evident that Leibnitz was occupied more or less with tl
study of the Magnet, it seems as if the reading of the text should
"aimant," and the translation accordingly "magnet," and thus the vie
expressed in the last sentence of note 1, *ante*, p. 125, is confirmed. Jan
also reads "aimant." *Cf.*, also, a rough draft of letter of Leibnitz
Peter the Great, January 16, 1712, Foucher de Careil, *Œuvres de Leibn*
7, 507, and a rough draft of a memorial of Leibnitz concerning the stu
of languages and the observation of the variation of the magnetic nee
in the Russian Empire, *ibid.*, 519, 531 *sq.;* also, *Observations über*
Magnet-Nadel, *ibid.*, 562 *sq.*

PAGE 126, line 1, "Vacuum." That is, the effort of all bodies, partic
larly air and water, to fill up empty space. The doctrine of the univers
attraction of all bodies has put an end to this false notion of "the fear
a vacuum" — *horror vacui.* On the vacuum, *cf.* Lasswitz, *Gesch. d. A*
mistik, *passim.*

PAGE 127, note 2. Add: Leibnitz's correspondence with Guerike, *cf.* rhardt, *Leibniz. philos. Schrift.*, 1, 89–112.

PAGE 129, line 1, "The view of the Cartesians." Janet, *Œuvres philos. Leibniz*, 1, 95, note 1, refers to Descartes, *Prin. Philos.*, II., § 4. . Veitch's trans., pp. 233–234.

PAGE 129, line 6, "Disagreement." Schaarschmidt remarks on this apter as follows: "In this chapter on Solidity the antithesis of the ckian and Leibnitzian view comes out with great acuteness. Locke, rting out from Sensualism, affirms that solidity is the most real property bodies, a statement which, if logically developed, must lead to the as-mption of hard impenetrable atoms. On the other hand, Leibnitz rightly intains that all the properties of the body which Locke derives from idity may be won without the assumption of a space-filling and im-netrable first being, and that 'solidity . . . is conceivable by pure ason, although the senses furnish the reason with the means of proof ereto.'" He also compares, on the atoms, Leibnitz's *Nouveau système la nature*, § 11 *sq.*

PAGE 129, last line, "Demonstration." This view of Leibnitz, as veloped by Christian Wolf, became the seed from which sprang the antian doctrine of the categories.

PAGE 130, line 13 [Chap. 7, line 6], "Idea of existence." Schaar-hmidt says: "The validity of this protest is clear, although Sensualism ntil the present time has not allowed itself to be brought back from the ockian view. The concept of existence springs from the source of self-nsciousness, not from the sensitivity. Sense-perception is as such first ossible, after we have won the concept of existence from self-conscious-ess, and now after the analogy of our own being have placed it under ie sense-phenomena for their explanation."

PAGE 130, note 1. Add: Schaarschmidt translates: "Inbetracht-ahme des Daseins."

PAGE 136, note 1. Add: Dr. E. G. Robinson, President of Brown niversity, and Professor of Philosophy, 1872–1889, gave in his MS. ectures to his classes on Psychology the following account of *Con-iousness:*

CONSCIOUSNESS

"As this is the one controlling source of all our knowledge of mind, it s indispensable that we determine as precisely as we can just what we nderstand by it.

"It is manifest at the outset that consciousness is the invariable accom-animent and necessary condition of all actual knowledge and of every ognitive act. It is itself never an act but always a state of mind without which mental acts are impossible and which itself is possible only through

cognitive acts, and this is true whatever the acts of cognition may
whether relating to objects in the external world, to the bodily organis
or to strictly subjective thought and feeling.

"It is evident, therefore, that we cannot with Reid regard conscio
ness as a faculty. A faculty can be called into exercise, consciousn
cannot be, but always exists as a condition of the exercise of a facul
Neither can we regard it as an intuitive idea, a regulative notion.
intuitive idea can exist only in consciousness. If consciousness be
intuitive idea, it must itself exist as the condition of its own existen
Neither can we regard it as identical with feeling, as sundry sensation
ists do, since feeling can exist only in consciousness. Nor yet again
we with Sir William Hamilton regard consciousness as the genus
which cognitive acts are the species, as the complement of the cognit
faculties.[1] A genus can exist only as made up of species. The disti
tion between consciousness and cognition is, according to their definit
when analyzed, only verbal and not real. Consciousness can be neit
a special faculty, nor an intuitive idea, nor a distinct species of kno
edge, nor the complement of the cognitive faculties, but is that wit
which all ideas must exist, any species of knowledge be acquired, a
every faculty be exercised.

"It cannot, accordingly, be correct to define consciousness as the sou
knowing that it knows,[1] or 'the power by which the soul knows its o
acts and states,'[2] or the power to know that it is itself that know
But consciousness is rather *the soul's actual knowing with itself tha
knows*, that is, is that relation to itself into which the ego is brought
cognition of any object other than itself, is the ego as subject commu
ing with itself as object through the mediation of some object disti
from itself. It is not a power of the soul but is a state,[4] a condition
function of the soul which always necessarily accompanies any nor
or voluntary exercise of the soul's powers. Speaking figuratively a
popularly, it is the mind's illumination of itself by its own action.

"That the foregoing is a correct account of consciousness see
evident:

"1. From the difference between cognition and consciousness and
relation of the one to the other. Cognition is a voluntary act of the e
and consciousness is an involuntary state or condition of the ego wh
always accompanies its cognitions, and neither one can by any possibil
exist without the other. Simple cognition is only a given correlation
subject and object; whereas in consciousness, which must always acco-

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[1] Sir William Hamilton, *Metaph.*, 133 *sq.*, 143 *sq.*, Amer. ed.; *Discussio*
p. 54, Amer. ed.

[2] President Noah Porter, *Hum. Intellect*, p. 83.

[3] President Mark Hopkins, *Outline Study of Man*, p. 107.

[4] In the oral exposition of this passage, Dr. Robinson remarked in substan
as follows: "A 'state' is usually considered as something inert, stable,
active; but not so with Consciousness. Consciousness is an *active* sta
'State' is preferable to 'act,' as the latter implies volition. Consciousness
an involuntary state or condition of the ego."

y cognition, the knowing subject is in and by the cognitive act
ught into correlation to itself as coexistent or conjunctive object.

‘2. The very word *consciousness*, which all are agreed in using, implies
ts composition a partnership and an intercommunication between self
knowing subject and self as known object, an intercommunication
ich occurs momentarily and continuously in every cognitive act.
hatever may have been the origin of the word, whether with philoso-
ers or the unlettered, it etymologically vindicates the view of conscious-
s here given.

‘3. It is admitted on all hands that knowledge is impossible without
nsciousness. But if consciousness itself be a distinct kind of knowl-
ge, whether generic or specific, then since all knowledge is possible
y in consciousness, consciousness itself must have its conditioning
nsciousness and so on *ad infinitum*. But not only does the conscious-
ss of every individual being have an absolute beginning, but every
en instant of consciousness is as distinct and separate from the
eceding as is every act of cognition from its preceding, and every
en instant of consciousness is dependent on some given act of cogni-
n. Consciousness, therefore, is not an act of cognition, nor a power
cognize, but is the simple reflex action of the ego upon itself in its own
ts of cognition ; and it cannot be the mind's power to know itself or to
ow that it is itself that knows, since it is a state or a relation of the ego
itself which is always dependent on the exercise of the power to know.

“If what has been said be true, then it is evident that consciousness,
hough always inseparable from bodily sensation, is predicable only of
ind as active intelligence or intellect. It is by the mind alone as the
rceiving, thinking power of the soul that any of the soul's energies,
gnitive, cogitative, emotive, volitional, can be brought into exercise or
ntinued in action, and since it is only by the exercise of these energies
at consciousness exists, it is of the mind alone, the perceiving and
inking power of the soul, that consciousness is predicable. Again, it
so follows that there can be but one kind of consciousness, that it is
ways spontaneous, the invariable and necessary accompaniment of cog-
tion, that is, it always accompanies cognition whether the cognition
of objects external or internal. It may vary in degree according to
grees of attention in acts of cognition, but it never changes from itself
to consciousness of another kind.

“The so-called self-consciousness or the reflective, acquired, philo-
phical consciousness, is nothing else than that act of mind by which
e ego itself, its acts or states or its consciousness are made objects of
tention. This does not differ from any other act of cognition and
nowledge. It furthermore, like every other act of knowledge, is always
companied by a consciousness of the act, and the consciousness of our
nsciousness, when it is made an object of attention and knowledge, is
st as clear as the consciousness we have when we perceive an external
ject or when we make a percept, a concept, or an inward emotion an
ject of attention and scrutiny.”

THE COMPONENTS OF CONSCIOUSNESS AND THEIR REALITY

"When we make consciousness an object of attention and analyz
into its component parts, we find it always to consist of three distingui
able elements, namely: the ego cognizing, the object cognized, and
communion of the ego with itself in the cognitive act; that is, we find
soul communing with itself in the act of knowing something which is
itself. But these three elements, when themselves analyzed, reveal
existence of but two distinct quantities or entities, the ego and the obj
of its knowledge. Out of these two factors, subject and object, carefu
analyzed, come directly or indirectly the entire materials of mental p
losophy.

"As to the real existence of these factors of consciousness, the subj
and its objects, we may begin with the objects. If there be any doubt
to the reality of the mind's objects, the so-called subject-objects, whet
they be sensations, feelings, perceptions, ideas, volitions, or whatever e
simple or complex, there is still stronger reason for doubting the existe
of an external world from which as cause or occasion these subject-obje
have sprung, and reasons stronger still for doubting the existence of
doubt. If mental objects be unreal, doubt has no existence. The tr
is, if there be any reality anywhere it is in the mind's own acts of subj
tive cognition.

"In like manner, if the object in consciousness has a real existen
still more indubitably real is the existence of the personal ego that kno
the object in consciousness. This is evident in three ways:

"First. We are conscious only while one of our mental faculties
powers is in exercise. In the act of its exercise the ego immediat
intuits itself as exercising its own energy. Self immediately cogni
self as active in every successive moment of consciousness.

"Second. It is plain that the objects cognized on which the existence
consciousness is always dependent, even the most subjective and subtle
them, are clearly distinguishable from the ego that cognizes the obj
In fact, no object in consciousness is ever cognized unless the cogniz
self clearly distinguishes between itself and the object. Such discrimi
tion cannot take place unless the ego that makes it has an indubita
real existence.

"Third. The existence of memory proves the real existence of the p
sonal ego. Consciousness is a succession of instants each of which
distinct from the preceding and following and each of which chan
with the ever-changing objects of cognition and thought, and yet th
vanishing instants so leave their traces on the personal ego that it can
will recall long series of them. Thus memory not only proves the exi
ence but the persistent identity of the ego that has an object of thoug
with its accompanying consciousness to-day which it can reproduce
morrow, the next day, and with indefinite frequency thereafter.

"Finally. The real existence of object and subject being indubita
established, it necessarily follows that the existence of consciousne

hin which both subject and object are found, and consequently its stworthiness as a source of knowledge in Psychology, must be unhesi- ingly admitted." (*Lects. on Psychol.*, MS., §§ 12, 13, as given to the ss of 1884.)

Requisites and Difficulties in Consulting Consciousness

"That is, in practising the so-called self-consciousness.

"First. Requisites: It is necessary that there be close and concen- ted attention, patience and persistence in observation, frequent and ried observations, careful discrimination between different classes as ll as between different species of the same class of mental phenomena; t each particular phenomenon be analyzed and traced to its cause or uses; that there be a distribution of phenomena according to their ture and causes so far as these can be ascertained.

"But with the utmost care, attention, and discrimination in the anal- is and classification of the phenomena given in consciousness, there is constant liability to error. The nature, relations, and causes of the enomena to be observed are many of them so subtle and obscure that versity and even conflict of view may be inevitable, but the disagree- ents, it must be remembered, turn chiefly on the theories respecting the igin of the phenomena and their relation to realities and not on the ality of the existence of the mental phenomena themselves.

"Second. Difficulties: The observation and examination of the phe- omena of consciousness, however, as compared with the observation nd examination of phenomena in the external world, is attended with arious, and to inexperienced minds with serious, difficulties. Thus:

"(*a*) So large a portion of early life is spent among and in the obser- ation of the phenomena of the outer world that it is difficult for many ersons to acquire the habit of accurate observation of the subjective henomena of mind. This difficulty is heightened:

"(*b*) By the necessity the conscious subject is under of becoming the bject of its own observation, the necessity of compelling himself to act nd to observe himself at the same instant. Upon the phenomena of the uter world the mind can concentrate an undivided attention, but when he mind makes its own action an object of attention there is requisite he double effort to produce mental movement and to observe oneself n the process, the result being at best but constrained and halting action f which from divided attention we can catch only hasty and imperfect iews.

"(*c*) Subjective acts and states occurring in rapid succession can be bserved only instantaneously, while most objects of sense remaining omparatively permanent in form can generally be examined repeatedly nd at leisure. The most evanescent of physical phenomena give ample ime for observation in comparison with the most enduring phenomena of mind.

"(*d*) Every individual consciousness is isolated from that of every other, and the report of no one's consciousness, notwithstanding t unanimity in the deliverance of all consciousnesses, can be accepted even understood by another without a personal scrutiny of his ow whereas in the natural sciences there may be many or few observers, a their reports can be understood and received without personal experime

"(*e*) The objects of consciousness are many of them complex in the selves and their causes and subtle in their relations to one another; th therefore are much more difficult of observation and require much m careful discrimination in observing them than objects in the exter world, the mechanical and chemical origin of which are at once and p pably discernible." (*Lects. on Psychol.*, § 14, ed. of 1884.)

To the above, as presenting more completely Dr. Robinson's view Consciousness, — a subject which "he regarded as fundamental to order and rectitude of thought" in Psychology, and on which "he e pended much time and thought" in perfecting his conception and statement, — may be added what he dictated to his classes on the questio

"CAN THERE BE AN UNCONSCIOUS MODIFICATION OF MIND?

"That is, can there be mental processes and the mind itself unaware them? The answer must manifestly depend on the meaning attached the word *mind*. If by mind be meant the thinking personal essence, or it denotes the co-ordinated psychical forces which constitute perso being, there can be no good ground for doubting that there may unconscious modifications of both its states and its powers. There a depths in the potentialities of the personal being which consciousne never reaches. Consciousness knows nothing of the inner sources energy whence thoughts, feelings, desires, and volitions emanate, b only of thoughts, feelings, desires, and volitions after they have tak form in the mind. It is upon the existence of these that consciousne depends, and of their existence alone can consciousness inform us. The may therefore be modifications of states of soul, increments and dimin tions of intellectual and moral power, and losses of intellectual possessio of which we may be unconscious and of which we may remain unco scious till we learn them from unwonted phenomena.

"So also thoughts and accompanying states of consciousness oft spring from instinct and hereditary bias which have long lain latent a have existed and operated below consciousness. Instances of knowled lost under some given condition of the brain and restored under oth cerebral conditions are examples of the same kind of unconscious chang Every species of mental action is more or less dependent on the state the brain, but to ascribe these changes to unconscious cerebration is assume that thought is the equivalent of physical force, is both the qua titative and qualitative product of the brain alone, rather than the produ of an active agent which uses the brain, and it is an assumption for whi there is no sufficient ground.

"But if by mind be meant the soul's acquisitive and cogitative power

intellect, the intelligence, the question whether it may not be uncon-
ously modified is equivalent to the query whether there may not be an
conscious mental act or (which is the same thing) an unconscious state
consciousness, a contradiction of terms. Every modification of mind,
the sense of the word *mind* here under consideration, must be by some
ntal act. But any mental act in order to be such must be a conscious
ntal act. Cognition and consciousness always coexist. An uncon-
ous modification of mind would necessitate a mental act of which one
s unconscious.

'The facts often cited in proof of an unconscious modification of mind
not seem to warrant the conclusions drawn from them ; for instance,
s performed in obedience to any established habits, single but synthetic
ions of complex objects, sudden and apparently unaccountable thoughts,
lden and mysterious recollection of long-forgotten persons and events,
e apparently simultaneous carrying forward of several trains of
ought. All these may be instances, not of unconscious cerebration or
unconscious modification of the mind, but of mental movements, the
cessive steps of which are too occult or too rapid and minute for the
nd in the study of itself to follow. In compound and complex mental
ocesses it is possible that simple steps may be so inadvertently taken as
be apparently taken unconsciously ; but an analysis of the process will
ow that while the degrees of consciousness may be indefinitely numer-
s, running down to the lowest stages of latent or sub-consciousness,
t unconsciousness is so far removed from ever so low a degree of con-
ousness as to be separated from it by an impassable chasm. As there
e many degrees in life but none in death, so there are degrees in con-
iousness but none in unconsciousness." (*Lects. on Psychol.*, § 20, ed.
1884.)

Page 138, note 1. Add : For the letter of Molyneux here referred
, dated March 2, 1693, *cf.* Locke's correspondence with Molyneux, in
ocke's *Works*, 9, 34, 12th ed., London, 1824, 9 vols. 8vo. Berkeley, *An
ssay toward a New Theory of Vision*, §§ 132, 133, Fraser's ed., Vol. 1,
. 96, 97, refers to it ; also Locke, *Philos. Wks.*, Bohn's ed., 1, 257–258,
te †. On the relations of Locke and Molyneux, *cf.* Fraser, *Locke*,
ackwood's Philos. Classics, Edinburgh and Philadelphia, 1890, p. 234 *sq.*,
e letter referred to, p. 238. Molyneux died as a result of a journey,
dertaken when ill, to see Locke.

Page 139, lines 17–20, "In this case . . . united with that sense-knowl-
ge with which touch has before furnished him." *Cf.* "The Mentor,"
monthly, published by the Alumni Association of the Perkins Institu-
n for the Blind, Boston, Mass., U.S.A., Vol. 2, No. 3, March 1892, pp.
–86, "Sculpture by the sense of Touch," giving an account of a blind
ulptor, Johnson M. Mundy, whose sight began to fail in his youth and
owly but surely grew less, until it practically vanished entirely. He
arned the sculptor's art between the ages of 22 and 29, and practised it
r twenty years till the loss of sight compelled him to give it up. Unable,

however, long to endure "the monotony of an idle and useless existenc and "with unabated aspiration and fondness for his art," he resumed work, performing the actual work of sculpture by the sense of touch. last work up to the date of the article here referred to was a heroic sta of Washington Irving.

Page 144, note 1. Add: *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 522–528, letter 5 to Sophie Charlotte ("hitherto not published," Gerhar *op. cit.*, 6, 477, note * — he should have said 'published entire,' as Foucl de Careil, *Lettres et opuscules inédits de Leibniz*, Paris, 1854, pp. 252–2 published a fragment of the same), in which Leibnitz subjects Bouhou book to a sharp critique. Leibnitz also refers to Bouhours in his letter Sebastian Kortholt, Sept. 30, 1708, Kortholt, *Leibnit. Epistolæ*, 1, 2 Dutens, *Leibnit. op. om.*, 5, 306–307; to Fried. Wilhelm Bierling, Oct. 1709, Kortholt, *op. cit.*, 4, 8; Dutens, *op. cit.*, 5, 355; Gerhardt, *Leibn philos. Schrift.*, 7, 487: "Bouhursius mihi contemtu vindicandus, verbis a Germanis, sed rebus refellendus videbatur." *Cf.*, also, Dute *op. cit.*, 5, 190: "Mediocris vir fuit Bouhursius, qui neglecto religio suæ, cui se addixerat, habitu. Damaretum quendam effingere, et fœ neam elegantiam exprimere satagebat."

Page 147, line 2 from bottom, "Modes." *Cf.* Descartes, *Prin. Phil* Bk. I., § 56, ed. Cousin, 3, 98; Veitch's English trans., 217; Germ trans. by J. H. v. Kirchmann, 2d ed., Heidelberg, 1887 (Bd. 26 of *Philos. Bibliothek*), p. 28: "Lorsque je dis ici façon ou mode, n'entends rien que ce que je nomme ailleurs attribut ou qualité. M lorsque je considère que la substance en est autrement disposée ou div sifiée, je me sers particulièrement du nom de mode ou façon; et lorsq de cette disposition ou changement, elle peut être appelée telle, je nom qualités les diverses façons qui font qu'elle est ainsi nommée; enf lorsque je pense plus généralment que ces modes ou qualités sont en substance, dans les considérer autrement que comme les dépendances cette substance, je les nomme attributs. Et, parceque je ne dois con voir en Dieu aucune variété ni changement, je ne dis pas qu'il y ait lui des modes ou des qualités, mais plutôt des attributs; et même da les choses créées, ce qui se trouve en elles toujours de même sorte, com l'existence et la durée en la chose qui existe et qui dure, je le nom attribut, et non pas mode ou qualité." *Cf.*, also, *New Essays*, Bk. I chap. 30, § 4, *infra*, p. 276, and note to p. 277, line 8, *infra*, p. 763.

Page 147, note 1. *Dele* "Appendix, p. ——." and substitute "Dunc 71–80." *Cf.*, also, *New Essays*, Bk. IV., chap. 10, § 7, Th., *ad fin.*, *inf* p. 505, § 9, Th., p. 507.

Page 149, line 15 from bottom, "The shortest great-arc of a circle The French text is: "La longueur du plus petit grand-arc de cercle," e

Page 150, line 13, "Buratini." *Cf.* Dutens, *Leibnit. op. om.*, 6, Pt. 319: "*Gravius*, Anglus, in descriptione Ægypti apud *Thevenot*, Vol. p. 14, mentionem facit, *Titi Livii Buratini*, jeune homme Venitien f ituel, qui étoit dans la compagnie. *Thevenot* in margine annotat : atini est maintenant maître de la monnoye du Roi de Pologne, et c'est ui que l'on vit il y a dix ou douze ans un modelle d'une *machine pour r.*"

AGE 153, line 7, "Lessius." Léonard Lessius, 1554–1623, a Flemish uit, was Professor of Philosophy at Douay, and of Theology, 1583–1623, ouvain. He opposed the doctrine of grace of Thos. Aquinas, and was ged with favoring Semi-Pelagianism. He was well acquainted with logy, law, mathematics, medicine, and history. For two of his *ra*, *cf.* Migne, *Theol. cur. compl.*, 3, 787 ; 15, 445. Janet, *Œuvres los. de Leibniz*, 1, 120, note 1, states that he was a celebrated casuist, n cited in Pascal's *Provinciales*, and adds that of his ethical works chief is the *De justitia et jure* (Migne, *op. cit.*, 15, 445) ; and that of theological works we have *De perfectionibus moribusque divinis ; De rtate arbitrii et præscientia Dei ; De summo bono ; De Providentia inis.*

AGE 154, line 13, "Accidents or abstracts." The strong contrast ween Locke's and Leibnitz's philosophies comes here again to the front. ke regards substance as a mere creation of thought, a subjective expe- nt of the understanding which "invents" it as a unitary support to, bearer of, the accidents. Leibnitz looks upon the "substance-concept he suitable expression of the idea of the actual, to which we refer k the accidents. Every phenomenon as such, in his view, presupposes actual being, since through such an actual being the phenomenon is possible. Substance, accordingly, is in the case of all phenomena that ch is constantly to be presupposed, the non-irrational (*Nicht-nichtzu- kende*), but in no sense a mere auxiliary concept of only subjective dity." — Schaarschmidt. Leibnitz is in the direct line of Hegel in his phasis of the concrete rather than the abstract.

AGE 154, line 4 from bottom, "Indefinite." *Cf.* Descartes, *Prin. Philos.*, II., § 21, ed. Cousin, Vol. 3, p. 138 : "Nous saurons aussi que ce nde, ou la matière étendue qui compose l'univers, n'a point de bornes, ceque, quelque part où nous en voulions feindre, nous pouvons encore giner au-delà des espaces indéfiniment étendus, que nous n'imaginons seulement, mais que nous concevons être tels en effet que nous les ginons ; de sorte qu'ils contiennent un corps indéfinement étendu," . We know that this world, or the extended matter which composes the verse, has no limits because, should we wish anywhere to feign such its, we can still imagine beyond spaces indefinitely extended, which we not imagine only, but which we conceive to be in fact such as we imag- them, so that they contain an indefinitely extended body.

AGE 154, note 1, line 4. Instead of "Appendix," read : Duncan, pp. 70 ; line 7, ditto, pp. 71–80 ; line 10, ditto, pp. 112–126.

AGE 155, line 26, "Motion." *Cf.* Leibnitz's 4th letter to Clarke, *ad* Gerhardt, 7, 377 ; Erdmann, 758 ; Jacques, 2, 437 ; Janet, 2, 640 ;

trans. Duncan, 253; 5th letter to Clarke, § 22, Gerhardt, 7, 394; E
mann, 765; Jacques, 2, 450; Janet, 2, 654; Duncan, 259.

PAGE 156, note 1. *Phys.*, VIII. [or H], 6, 258^b 10: *ἐπεὶ δὲ δεῖ κίνη
ἀεὶ εἶναι καὶ μὴ διαλείπειν, ἀνάγκη εἶναί τι ὃ πρῶτον κινεῖ, εἴτε ἓν εἴτε πλε
καὶ τὸ πρῶτον κινοῦν ἀκίνητον.*

PAGE 157, note 1. Add: Φυσικῆς Ἀκροάσεως, Δ, 11, 219^b 1: *τοῦτο γ
ἐστιν ὁ χρόνος, ἀριθμὸς κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον. οὐκ ἄρα κίνη
ὁ χρόνος ἀλλ' ᾗ ἀριθμὸν ἔχει ἡ κίνησις.* Φυσικῆς Ἀκροάσεως, Δ, 11, 219^b 8: *ὁ
χρόνος ἐστὶ τὸ ἀριθμούμενον καὶ οὐχ ᾧ ἀριθμοῦμεν.* *Cf.* Zeller, *Philos.
Griech.*, 3d ed., 1879, II., 2 [Vol. 4], 402.

PAGE 158, note 1. Add: Spinoza regards all determination as a ne
tion — *Omnis determinatio est negatio* — of this originally posited
necessarily presupposed absolute. Hegel likewise in his *Logik* maintai
essentially the same position as Leibnitz, so that Leibnitz may rightly
said to be in the direct line of the philosophical development culminati
in Hegel. *Cf.* Wallace, *The Logic of Hegel*, 1st ed., 1874; 2d ed., revis
and augmented, Oxford, Clarendon Press, 1892–1894, *passim.*

PAGE 160, line 9, "Transcendent." Janet, *Œuvres philos. de Leibn*
1, 128, in his note to this passage, says: "Expressions of the scholas
mathematical language, rarely employed to-day. The *surd* (*le sourd*)
the incommensurable, for example, $\sqrt{2}$; *le rompu* — the broken — is t
fraction, as $\frac{1}{2}$; the transcendent is that which cannot be calculated b
limited number of arithmetical operations, for example, log 3. Th
three terms are comprised between two whole numbers."

PAGE 162, note 1. Add: *Locke's Essay*, ed. Fraser, 1, 295, line 9 fr
bottom.

PAGE 162, note 2. Add: *Cf.* the note of Foucher de Careil, *Sur
trois sens du mot infini dans la philosophie de Leibniz, Nouvelles Lett
et Opuscules inédits de Leibniz*, Paris, 1857, pp. 404–407; also A. Penj
De infinito apud Leibnitium, Paris, 1878.

PAGE 162, note 3. Add: *Locke's Essay*, ed. Fraser, 1, 277, line 14.

PAGE 166, note 1. Add: *Locke's Essay*, ed. Fraser, 1, 300, line 10.

PAGE 167, note 1. Add: The definition referred to runs as follow
"*Amare* autem sive *diligere* est felicitate alterius delectari, vel qu
eodem redit, felicitatem alienam adsciscere [Erdmann — asciscere]
suam. Unde difficilis nodus solvitur, magni etiam in Theologia momen
quomodo amor non mercenarius detur, qui sit a spe metuque et om
utilitatis respectu separatus: scilicet quorum utilitas [Erdmann — feli
tas] delectat, eorum felicitas nostram ingreditur, nam quæ delectant
se expetuntur." *Cf.* Dutens, *Leibnit. op. om.*, 4, Pt. IV., 295; Erdman
118, b. The entire preface to the *Codex juris* is given in Dutens, *op. c*
4, Pt. III., 287–328.

Page 168, note 1, *ad fin.* Add: *Infra*, pp. 177 *sq.*, 188. Also, *Théo- icée*, III., § 404, Gerhardt, 6, 357; Erdmann, 620; Jacques, 2, 300; anet, 2, 402. *Cf.*, also, J. H. v. Kirchmann, *Erläuterungen zur Théo- icée von Leibniz* (Bd. 80, of his *Philos. Bibliothek*, Leipzig, 1879), rläuterung, 264, pp. 145–147.

Page 172, line 4 from bottom, "Displeasure." Schaarschmidt says at neither Locke nor Leibnitz have yet reached the distinction between motion and passion, as appears from the language of both; and that ant first grasped the distinction and attempted to determine it more ccurately.

Page 174, note 1. Add: *Phys.*, Γ, 201^{a} 10: ἡ τοῦ δυνάμει ὄντος ἐντε- έχεια, ᾗ τοιοῦτον, κίνησίς ἐστιν, οἷον τοῦ μὲν ἀλλοιωτοῦ, ᾗ ἀλλοιωτόν, ἀλλοίωσις, οῦ δὲ αὐξητοῦ καὶ τοῦ ἀντικειμένου φθιτοῦ (οὐδὲν γὰρ ὄνομα κοινὸν ἐπ' ἀμφοῖν) ὔξησις καὶ φθίσις τοῦ δὲ γενητοῦ καὶ φθαρτοῦ γένεσις καὶ φθορά, τοῦ δὲ φορητοῦ ορά. *Metaphys.*, K, 1065^{b} 16: τὴν τοῦ δυνάμει ᾗ τοιοῦτόν ἐστιν ἐνέργειαν έγω κίνησιν. *Cf.* Zeller, *Philos. d. Griech.*, II., 2 [Vol. 4], 351 *sq.*, 89 *sq.*; Wallace, *Outlines of the Philos. of Aristotle*, § 42, p. 77, 3d ed., 883.

Page 174, note 2. Add: Translations of the two pieces last referred o will be found in the Appendix, *infra*, the *Beilage* to the letter to Fabri, p. 699 *sq.*; the *Specimen Dynamicum*, pp. 670 *sq.*

Page 175, line 5, "Idea of power." Leibnitz carefully distinguishes etween mere power and force ("Macht" and "Kraft"). *Cf. De rimæ philos. emendatione*, etc., Gerhardt, 4, 469; Erdmann, 122; acques, 1, 453 [in French]; Janet, 2, 525 [in French]; Duncan, *Philos. Vks. of Leibnitz*, 69.

Page 175, line 18, "Because of our ignorance." That is, we are thus ar incapable of resolving our sense-impressions, *i.e.* the simple sense- ualities, into anything more simple, and are therefore compelled to egard them as simple presentations, although in themselves possibly omposite and in fact in many cases in indirect ways shown to be so. *f.*, also, *New Essays*, Bk. III., chap. 3, § 18, Th., *infra*, p. 317, and ote 2.

Page 175, line 24, "Primitive truths." *Cf. New Essays*, Bk. I., chap. , and Bk. IV., chap. 2, *infra*, pp. 404 *sq.*

Page 176, line 13 from bottom, "Casati." Paolo Casati, 1617–1707, learned Italian Jesuit, who taught mathematics and theology at Rome, nd was said to have converted Queen Christiana, of Sweden, to the atholic faith. On his return from Sweden he became Director of the niversity of Parma. Among his works are *Vacuum proscriptum*, enoa, 1649; *De terra machinio mota*, Rome, 1668; *Mechanicorum lib. VIII.*, Lyons, 1684; *De igne dissertationes physicæ*, Venice, 1686, 1695; *ydrostaticæ dissert.*, 1695; *Opticæ dissert.*, 1705. Lasswitz, *Gesch. d. tomistik*, 2, 490, says: "Im Einzelnen ebenfalls durchaus korpuskular sind die physikalischen Erklärungen des Jesuiten Paolo Casati . . . Abe seine allgemeine Auffassung der Natur ist dabei vollständig scholastisch."

Page 176, note 1. Add: *Cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 421–428 especially 423–424. Malebranche changed his views under the influenc of Huygens and Leibnitz. The *Loix générales de la communication de mouvements*, Lasswitz says, was added as an Appendix to the later editions of the *Recherche de la vérité.*

Page 180, note 1. Add: *Cf.* § 13 of this chapter, *infra*, pp. 182–184 *New Essays*, Bk. IV., chap. 6, *ad fin.*, *infra*, p. 462, note 1; also, Gerhardt, 7, 108–111; Erdmann, 669; also the fragment entitled *De Libertat* published by Foucher de Careil, *Nouvelles Lettres et Opuscules inédits d Leibniz*, Paris, 1857, pp. 178–185. "Apart from the freedom of fact an of right," says Schaarschmidt, "Leibnitz distinguishes between ethica freedom and free-will (*Willkür*). The former, ethical freedom, is th power to follow the ethical insight in spite of opposing internal hindrances, such as the passions. This concept also is clear and simple The difficulty proper lies hidden in the conception of free-will (*de Willkür*), the *liberum arbitrium*, by which, as Leibnitz expresses himself, is meant, 'that the strongest reasons or impressions which th understanding presents to the will do not prevent the act of the will fron being contingent, and do not give it an absolute and, so to speak, metaphysical necessity.'" Leibnitz regards the action of the will as a motiv which *inclines*, but does not compel, — but at the same time he assumes *Théodicée*, Pt. I., § 52, a self-determination of the will over against whic the expression *incline* appears as a mere evasion. *Cf. infra*, p. 462, not 1. On Leibnitz's doctrine of the Will and Freedom, *cf.* G. Class, *Di metaphys. Voraussetzungen d. Leibnitzisch Determinismus,* Tübingen, 1874 pp. 9, 78 *sq.*; F. Kirchner, *Leibniz's Psychologie*, Cöthen, 1875, pp. 82 *sq.* M. Penzler, *Die Monadenlehre u. ihre Beziehung z. griech. Philos.* Minden, 1878, p. 23; L. Braeutigam, *Leibniz und Herbart über die Freiheit des menschl. Willens*, Heidelberg, 1882, pp. 3–17, 28–39; M. Nourrisson, *La Philosophie de Leibniz*, Paris, 1860, pp. 268–286; Kuno Fischer *Gesch. d. n. Philos.*, Vol. 2 [Leibniz] pp. 512–533, 3d ed. Heidelberg 1889. For a clear analysis and able, though brief, discussion of the various senses in which the "freedom of will" is used, and of "determinism,' *cf.* Robinson, *Principles and Practice of Morality*, pp. 122–137.

Page 180, note 2. After "1881," add: pp. 68 *sq.* The Greek text o the passages referred to reads thus: 'Ηθικὰ Νικομάχεια, Γ, 4, 1112^{a} 15: γὰρ προαίρεσις μετὰ λόγου καὶ διανοίας. 5, 1112^{a} 30: βουλευόμεθα δὲ περὶ τῶ ἐφ' ἡμῖν πρακτῶν. *Cf.*, also, Sir Alexander Grant, *The Ethics of Aristotle* 3d ed., London, 1874, Vol. 2, pp. 17, 19, 'Ηθ. Νικ., III., chap. 2, § 17; chap 3, § 7. Peter's translation follows the chapter and section numbering o Grant's text. *Cf.*, also, the following pasages from the so-called 'Ηθικ Μεγάλα — *Magna Moralia* — "which," Schaarschmidt says, "at least fo Leibnitz, was a genuine work of Aristotle," — though now regarded, ac-ding to Zeller, as "a sketch compiled from both" the Nicomachean and demian ethics, "but more especially from the Eudemian" (*Philos. d. iech.*, II., 2 [Vol. 4], 102, note 1; *Outlines of the Hist. of Greek Philos.*, w York, 1886, p. 175): A, 16, 1188^b 25: ἐπεὶ δὲ τὸ ἑκούσιον ἐν οὐδεμιᾷ ῇ ἐστίν, λοιπὸν ἂν ἐιή τὸ ἐκ διανοίας γιγνόμενον. 1188^b 31: ὡς τοῦ ἐκουσίου os ἐν τῷ διανοηθῆναι. 1188^b 37: ἐνταῦθα ἄρα τὸ ἑκούσιον πίπτει εἰς τὸ μετὰ νοίας. A, 17, 1189^a 31: εἰ τοίνυν ἡ προαίρεσις ὄρεξίς τις βουλευτικὴ μετὰ νοίας, οὐκ ἔστι τὸ ἑκούσιον προαιρετόν. ἑκόντες γὰρ πολλὰ πράττομεν πρὸ διανοηθῆναι καὶ βουλεύσασθαι, οἷον καθίζομεν καὶ ἀνιστάμεθα καὶ ἄλλα πολλὰ αῦτα ἑκόντες μὲν ἄνευ δὲ τοῦ διανοηθῆναι, τὸ δὲ κατὰ προαίρεσιν πᾶν ἦν μετὰ νοίας. οὐκ ἄρα τὸ ἑκούσιον προαιρετόν, ἀλλὰ τὸ προαιρετὸν ἑκούσιον· ἄν τι προαιρώμεθα πράττειν βουλευσάμενοι, ἑκόντες πράττομεν. With this last ssage, *cf.* 'Ηθ. Νικ., Γ, 4, 1111^b 6: ἡ προαίρεσις δὴ ἑκούσιον μὲν φαίνεται, ταὐτὸν δέ, ἀλλ' ἐπὶ πλέον τὸ ἑκούσιον. 1112^a 14: ἑκούσιον μὲν δὴ φαίνεται [προαίρεσις], τὸ δ' ἑκούσιον οὐ πᾶν προαιρετόν. 1113^a 9: ὄντος δὲ τοῦ προαι-οῦ βουλευτοῦ ὀρεκτοῦ τῶν ἐφ' ἡμῖν, καὶ ἡ προαίρεσις ἂν εἴη βουλευτικὴ ὄρεξις ν ἐφ' ἡμῖν. The 'Ηθ. Νικ., Γ, 3, 1111^a 22, defines τὸ ἑκούσιον, the vol-tary, — *das Freiwillige*, — thus: τὸ ἑκούσιον δόξειεν ἂν εἶναι οὗ ἡ ἀρχὴ ἐν τῷ εἰδότι τὰ καθ' ἕκαστα ἐν οἷς ἡ πρᾶξις. 'Ηθ. Εὐδήμια, Β, 8, 1224^a 6: πεται ἐν τῷ διανούμενόν πως πράττειν εἶναι τὸ ἑκούσιον. B, 9, 1225^a 36: εὶ δὲ τοῦτ' ἔχει τέλος, καὶ οὔτε τῇ ὀρέξει οὔτε τῇ προαιρέσει τὸ ἑκουσίον ὥρισ-ι, λοιπὸν δὴ ὁρίσασθαι τὰ κατὰ διάνοιαν. B, 10, 1226^b 6: ἡ γὰρ προαίρεσις εσις μέν ἐστιν, οὐχ ἁπλῶς δέ, ἀλλ' ἑτέρου πρὸ ἑτέρου· τοῦτο δὲ οὐχ οἷόν ἄνευ σκέψεως καὶ βουλῆς. διὸ ἐκ δόξης βουλευτικῆς ἐστὶν ἡ προαίρεσις. *Cf.*, so, Zeller, *Philos. d. Griech.*, 3d ed., II., 2 [Vol. 4], 587 *sq.*

On Aristotle's doctrine of the Will and Freedom, *cf.* 'Ηθ. Νικ., Γ. 1–8, 09–1115; Grant, *Ethics of Aristotle*, 2, 5–32, and notes; also his Plan Book III., *ibid.*, iii., iv., and Essay V., 1, 284 *sq.*; Essay VII., 1, 376 *sq.*; A. Stewart, *Notes on the Nicomachean Ethics of Aristotle*, Oxford, arendon Press, 1892, Vol. 1, pp. 224–230, 232–236, 240, 243–245, 250, 9; Vol. 2, pp. 16, 17, 379, 380; Trendelenburg, *Histor. Beiträge z. hilos.*, 2, 149 *sq.*; Windelband-Tufts, *Hist. of Philos.*, § 16, 2, pp. 191, 2.

On Leibnitz's relations and indebtedness to Aristotle, *cf.* D. Jacoby, *e Leibnitii Studiis Aristotelicis*, Berlin, 1867; D. Nolen, *Quid Leib-zius Aristoteli debuerit*, Paris, 1875: M. Penzler, *Die Monadenlehre u. re Beziehung z. griech. Philosophie*, Minden, 1878, p. 29.

Page 183, line 13 from bottom, "The best." *Cf. New Essays*, Bk. V., chap. 6, *ad fin.*, *infra*, p. 462, note 1.

Page 184, lines 7, 6 from bottom, "A freedom of equilibrium absolutely aginary and impracticable." Leibnitz argues against indeterminism d equilibrium of will, *cf.* Gerhardt, 7, 109: "*Libertas indifferentiæ est possibilis.* Adeo ut ne in Deum quidem cadat, nam determinatus ille st ad optimum efficiendum. Et creaturæ semper ex rationibus internis xternisque determinantur" (*ib.*, 110, in French); Erdmann, 669 (in atin). *Cf.* Robinson, *Principles and Practice of Morality*, p. 126.

Page 185, line 20, "*Vigor of Will.*" *Cf.* Robinson, *Principles a* *Practice of Morality*, p. 138, where Virtue is defined as "the soul's or t will's persistency of compliance, — its *energy* in complying with the mo law," — a definition perhaps suggested by that of Kant, quoted in t foot-note: "the strength of the human will in the performance of duty

Page 185, note 1. After "Erdmann," add: Janet.

Page 192, line 8, "Clearly felt." Schaarschmidt says: "Our feelin can be very lively, while the ideas causing them may be obscure, co fused, nay even senseless (let one think, for example, of religious fana cism, of drunkenness, the aberrations of revenge, etc.); on the other han our thoughts can be distinctly, *i.e.* from one another, indeed be disti guishable, without being clearly, *i.e.* in their own content, conceived."

Page 192, note 2. Add: The passage from the *Ethica* referred to this note is found in Vol. 1, pp. 270 *sq.* of this edition. *Cf.* also t *Short Essay on God*, etc., *Korte Verhandeling van God*, etc., Bk. I chaps. 5 and 19, ed. Van Vloten and Land, 2, 310, 338; Schaarschmidt German trans., pp. 54, 84 *sq.*, in J. H. v. Kirchmann's *Philos. Bibliothe* Bd. 18, 2d ed., Berlin, 1874.

Page 193, line 6, "Francisco Borgia." General of the Jesuits, 156 1572.

Page 199, note 1. Add: The texts of Erdmann, Jacques, and Jane and the translation of Schaarschmidt end at "pleasure."

Page 203, note 2. The note should read as follows: Gerhardt read "Ou venons au propos;" the phrase is wanting in the texts of Erdman Jacques, Janet, and in Schaarschmidt's translation.

Page 204, note 1. After "proposer," the note should read: wanti in the texts of Erdmann, Jacques, Janet, and in Schaarschmidt's tran lation.

Page 204, note 2. After "gauche," the note should read: wanting the texts of Erdmann, Jacques, Janet, and in Schaarschmidt's transl tion. For the allusion, etc.

Page 205, note 1. After "Erdmann," add: Janet.

Page 205, note 2. After "Erdmann," add: Janet.

Page 206, line 12 from bottom, "Following the good." Leibnitz is forerunner of Kant in the expression here used that the chief end reason is practical. "In Kant's view," says Schaarschmidt, "the retical reason has only the negative significance of raising us above t contemplation of nature and the sphere of experience to that positi where beyond the sensuous the practical principles, by means of a legi lation derived from freedom, unconditionally determine the will." *C* also Leibnitz's definition in the same sense of "wisdom as the science ɔpiness," Gerhardt, *Leibniz. philos. Schrift.*, 7, 86; Erdmann, 671: Veisheit ist nichts anders als die Wissenschaft der Glückseeligkeit, so ; nehmlich zur Glückseeligkeit zu gelangen lehret."

ᴾAGE 208, line 21, "Endure forever." *Cf.* Spinoza, *Korte Verhandeling ı God*, Bk. II., chap. 26, ed. Vloten and Land, 2, 359; Schaarschmidt's ns. 105: "Zo konnen wy 't met reden voor een groote ongerijmtheid ıten, 't geene veele, en die men anders voor groote god-geleerde acht, ;gen; namelijk, byaldien op de liefde Gods geen eeuwig leeven en am te volgen, zy als dan haar zelfs best zouden zoeken; even als of zy s dat beter was, als God, zouden uytvinden. Dit is alzo onnozel als of ı vis wonde zeggen (voor welke doch buyten het water geen leven is): aldien my op dit leven in het water geen eeuwig leven en zoude men te volgen, zo wil ik uyt het water na het land toe; ja maar wat nnen ons die God niet en kennen dog anders zeggen?" *i.e.* "Thus can rightly pronounce exceedingly absurd the statement which many, ıom we otherwise deem great theologians, make; namely, that if eternal ː did not follow from the love of God, then man should seek his own ıst good, as though man thereby could find something better than God. 'iis were just as foolish as if a fish [for whom out of the water there is life] should say, if for me after this life in the water no eternal life :lows, I will go out of the water on to the land. What else, how- ·er, can they who do not know God say to us?" Schaarschmidt thinks at Leibnitz's accord with Spinoza was perhaps mediated by the Stoic ctrine.

PAGE 208, line 25, "Absolutely indispensable." *Cf. infra*, p. 261, note Leibnitz, while admitting the truth of the Aristotelian and Stoic view, ·vertheless contests that in this life we cannot always demonstrate the entity of the virtuous and useful, and supports the life of duty and ·ercomes the dualism between duty and pleasure through the "thought God and immortality." Kant grounded rational belief in immortality ɔon this very dualism.

PAGE 210, note 1. After "Erdmann" add: Janet.

PAGE 210, note 2. Add: Fraser, *Locke's Essay*, 1, 358, reads: § 66. is edition gives full account of all the various readings and changes in .e various editions of Locke's Essay, including those in the translation Coste. It is in all respects the best edition of the Essay yet issued, ıd the thanks of all students of philosophy are most heartily rendered Prof. Fraser for his splendid work.

PAGE 211, note 1. Add: 3d ed., enlarged, 2 vols., 8vo, A. & C. Black, dinburgh, 1893.

PAGE 212, line 25, "Turn them aside from it." *Cf. New Essays*, Bk. I., chap. 27, § 36, Th.; *ante*, pp. 194 *sq.*, § 53, Th., 207. Perfectibility is eibnitz's ethical norm, and the "luminous pleasures" are those which ssist us in our efforts to attain this perfection, because they spring out of the need of, and therefore also out of the idea, though obscure, of true good.

Page 213, line 12, "Greatness of the consequent." Janet, *Œuv philos. de Leibniz*, 1, 185, note 1, says: "*The greatness of the con- quence*, *i.e.* the greater or less probability that the foreseen good or will occur; *the greatness of the consequent*, *i.e.* the greater or less g or evil which the outcome must bring."

Page 213, note 1. After "Erdmann," add: Janet.

Page 214, note 1, line 1. After "70^a 3," add: *τὸ μὲν εἰκός ἐστι πρότεs ἔνδοξος· ὃ γὰρ ὡς ἐπὶ τὸ πολὺ ἴσασιν οὕτω γινόμενον ἢ μὴ γινόμενον ἢ ὂν ἢ μὴ, τοῦτ' ἐστιν εἰκός*, *i.e.* "The probable," etc. And in line 5, after "1357^a 3 add: *τὸ μὲν γὰρ εἰκός ἐστιν ὡς ἐπὶ τὸ πολὺ γινόμενον*, *i.e.* "For the pro- ble," etc.

Page 217, line 2 from bottom, "World." "Because," as Scha- schmidt says, "mathematics as the science of magnitude is applica only to sensible things."

Page 218, lines 18, 19, "The term thought in the same general way "We exercise an inner activity," says Schaarschmidt, "either so that produce perception-(phantasie-) images or (formulated—*sprachgeform*) thought-images. The lower situated entelechies do the former, of latter minds only are capable. We can, continues Leibnitz, in case necessity designate both of these activities as thought. To-day we [Germans] use 'Vorstellen' as the most general expression to indic the inner activity."

Page 218, note 1. Add: Fraser's *Locke's Essay*, 1, 371, line 3.

Page 219, line 26, "Comes from thought.]" Schaarschmidt says his note to this passage: "These weighty expressions are the pure res of the fundamental thought, that every substance acts from an in spontaneity. Passion thus has for the spirit only the significance o confused and therefore imperfect activity, whose most pregnant expr- sion for the subject is pain; for bodies, however, passion means imparted or mediated activity, in connection with which it is to be c- sidered that, since bodies are mere phenomena, their changes are a only phenomenal, whose grounds must always be sought in the sponta- ous forces of simple substances (out of whose joint-existence—*Zusa- mensein*—our confused thought forms the corporeal mass)." *Cf.* *N Essays*, Bk. II., chap. 8, *ante*, p. 131, note 1. Schaarschmidt ad "Activity in the absolute sense, however, is the transition to grea perfection and thence also accompanied with pleasure."

Page 219, note 1. After "Jacques," add: and Janet.

Page 220, line 2 from bottom, "Complete separation." Schaarschm says in his note to the text at this point, "Separation arises from Aristotelian concept *χωρισμός*. *Χωρίζειν* is the separation or loosing of rely spiritual from the material. After Descartes had again renewed e ancient Platonic-Aristotelian Dualism in another way, Spinoza and eibnitz, each in his own way, again set up a monism, which the realistic ndency of Locke in another way and towards another goal also endeav- ed to attain."

Page 220, note 1, line 2. After "Erdmann," add: Janet.

Page 222, line 10 from bottom, "Old word." That is "chevauchier," chevalchier," "chevaucher," "chevalcher," "cevaucier," all these dif- rent forms occurring in the old writers. For examples, *cf.* Littré, who ves the Provençal "cavalcar," "cavalguar," Italian "cavalcare," all erived from the Low-Latin "caballicare." "Chevaucher," says Littré, reserved for elevated style and especially for narrations regarding the liddle Age; "aller à cheval" is the common and daily form of speech.

Page 222, line 2 from bottom, "Seen." Schaarschmidt says: "That ocke here makes the formation of the mixed or compound modes pro- ed from wider experience, to which he certainly adds 'invention'— om a purpose—Leibnitz not only allows in a noteworthy fashion, but e also adds thereto as a further source the activity of the fancy. Locke ndoubtedly understands by mixed modes something wholly different om that which is formed by means of dreams and fancies; namely, bstractions from given compound relations, which, according to the easure of our interest, or at least of our attention, are formed and nguistically fixed."

Page 223, note 1. Add: For Leibnitz on Mademoiselle de Scudery, in he "Monatlicher Auszug aus allerhand neu herausgegeben, nützlichen nd artigen Büchern," Dec., 1700, pp. 909, 910, and Dec., 1701, IV., *cf.* uhrauer, *Leibnitz's Deutsche Schriften*, 2, 414–420. *Cf.*, also, Foucher e Careil, *Lettres et opuscules inédits de Leibniz*, Paris, 1854, pp. 254– 60; F. de Careil, *Œuvres de Leibniz*, 2d ed., Paris, 1869, 2, 515–517.

Page 224, line 23, "Called causes in the schools." *Cf.* Appendix, *nfra*, pp. 637, 672 *sq.*, 699 *sq.*, for Leibnitz's further exposition of the loctrine here set forth. In this place, "without allowing himself to nter upon a critique of Locke's exposition of the term *primal cause*, eibnitz," says Schaarschmidt, "contents himself with ascribing to it a louble signification, one of which goes back to the Aristotelian termi- ology; the other indicates the end. At the same time, however, he nentions the fact that the primal cause may also be understood as the naterial ground of a thing. Critical investigation of this important con- eption first begins with Hume."

Page 227, line 11, "Promoter." Chéruel, *Dictionnaire des Institu- ions Françaises*, sub voc., says: "Promoteur": "Ecclésiastique chargé lu ministère public dans les officialités (voy. ce mot) [in that article it s explained that officialité = the court of a bishop or archbishop], dans es assemblées du clergé, dans les chambres supérieurs ecclésiastiques, en n mot dans tous les tribunaux ecclésiastiques. Les fonctions des pro-

moteurs consistaient surtout à maintenir les droits, libertés et immunit
de l'Église ; à veiller à l'observation de la discipline ecclésiastique et
poursuivre les crimes et délits qui étaient de la compétence des juges
l'Église. Il y avait quelquefois dans les officialités un vice-promoteur ;
était, comme le promoteur, nommé par l'évêque."

In short, the promoteur was a sort of ecclesiastical district attorne
and he is here on the opposite side of the case from the young lawye
When he calls the lawyer "doctor juris," the latter objects that he oug
to call him "doctor juris utriusque," *i.e.*, doctor of both civil and can
law, or in our phrase, doctor of laws, LL.D. To which the promote
replies sarcastically.

Page 227, note 2, line 3. After "Eucken," insert: *Gesch. und Krit*
der Grundbegriffe der Gegenwart, Leipzig, 1878, pp. 69–78 (Leibnitz,
70); *Die Grundbegriffe der Gegenwart historisch und kritisch entwickel*
2te, völlig umgearbeitete Auflage, Leipzig, 1893, pp. 98–102 (Leibnit
p. 98), but not so fully as in the 1st ed., the author stating in the Prefac
that "the historical statements are strictly limited to that which appea
immediately requisite to the understanding of the present time." En
trans. of 1st ed., *The Fundamental Concepts*, etc. At end of note, add
Schaarschmidt states Leibnitz's view thus: "Knowledge *a priori* mea
with Leibnitz, who with his predecessors in this matter attached hims
to the Aristotelian conception of the πρότερον τῇ φύσει, knowledge fro
the cause, and, accordingly, knowledge *a posteriori* means with hi
knowledge from the working or result, and therefore from external e
perience resting upon the phenomenon of things." Kant's usage diffe
from that of Leibnitz. *A priori* knowledge is for Kant that which pr
ceeds from pure reason and *not* from experience; while *a posterio*
knowledge comes only from external experience, not "from result a
working in general." *Cf.*, also, J. H. von Kirchmann's Erläuterun
No. 25, to the *Théodicée*, Bk. I., § 44; p. 34 of his *Erläuterungen z*
Théodicée v. Leibniz, Leipzig, 1879.

Page 228, note 2. *Cf. infra*, pp. 399, note 3, 551, note 4.

Page 229, note 2, line 1. After "II. and VI.," add: ed. Cousin,
246 *sq.*, 322 *sq.*

Page 230, note 1. After "*Dioptrica*, IV., 1 *sq.*," add: ed. Cousin,
34 *sq.*; after "*Passiones Animæ*, I., 31 *sq.*," add: ed. Cousin, 4, 63 *sq*
after "*Prin. Philos.*, IV., 189, 196, 197," add: ed. Cousin, 3, 500, 50
509.

Page 230, note 1. Add: *Cf.*, also, Cousin, *Œuvres de Descartes*,
200, where Descartes, in a letter (dated by the annotator 1640—t
letter in Bk. II., No. 36, in ed. of 1666) to Meissonier, "médecin
Lyon," says: "Mon opinion est que cette glande" ["la petite glan
nommée *conarion*"] "est le principal siége de l'âme, et le lieu où se fo
toutes nos pensées. La raison qui me donne cette créance est que je
trouve aucune partie en tout le cerveau, excepté celle-là seule, qui ne s

uble," etc. In a letter to Mersenne, dated by the annotator April 1, 40, Cousin, *Œuvres de Descartes*, 8, 215 *sq.* [ed. of 1666, Bk. II., Letter). 38], Descartes makes substantially the same statement and gives the me reasons therefor, and adds: "Mais je crois que c'est toute le reste . cerveau qui sert le plus à la mémoire," etc.

Page 233, line 4 from bottom, "The union of the soul and the body." ibnitz was undoubtedly satisfied that his Pre-established Harmony tisfactorily explained the "union of the soul and the body," and for ose who accept his philosophy it does. But those who look for another planation, for example, in a real reciprocal action between the soul and rtain substances of the body, find in Leibnitz's semi-spiritualistic inter-etation of matter a clue or suggestion thereto.

Page 235, end of chap. 24, "Comprising substances." Leibnitz, ac-rding to Schaarschmidt, means to say that, strictly understood, the llective ideas are not signs of substances, rather, indeed, are the single jects themselves substances, as, for example, the army, the herd, con-st of substances. Yet the collective ideas serve to a certain extent indi-ctly to indicate substances. Leibnitz adds this concession here because his system of monads he departs very widely from the customary con-ption of substance, and yet may not lose all touch with the linguistic age.

Page 235, line 6, 5 from bottom, "*Essence of reason.*" That is, *ens tionis*, which actuality reaches only so far as it is a thought-image.

Page 235, line 3 from bottom, "Comes from the supreme reason." Relations, so Leibnitz will have us understand the matter," says Schaar-hmidt, "are in the first place products of our thought, for they are either the expression of substances, nor of the determinations (*Attribute, odi*) inhering in them, but the expression of our subjective conception the relation of things to one another. But this human conception, though also subjective, is yet again grounded in the nature of things, in rticular in the nature of the mind, and to this extent springs out of its vn constitution, like the eternal truths. And the constitution of the ind, as the 'mirror of the universe,' corresponds again to reality in rtue of the pre-established harmony. The thoroughgoing parallelism of e inner with the outer occurrence gives consequently to the relations, cording to Leibnitz, a certain real meaning."

Page 239, note 1, line 4. Instead of "*Leben*," read: *Eine Biographie.*

Page 241, note 1. Add: *Corpus Juris Civilis*, 6th stereotyped ed., Vol. 1, 659, a; *Digesta*, ed. Mommsen, Berlin, Weidmann, 1893. Schaarschmidt ys it is "a definition springing from Stoicism," and compares Göp-ert, *Ueber einheitliche, zusammengesetzte und Gesammtsachen nach röm. echt*, pp. 7 *sq.*, 20 *sq.*, Halle, 1871.

Page 242, line 4, "Soul." Leibnitz is right in placing the identity of an in the soul and its conservation, instead of in the "well-organized

body,'' as Locke does. The relative unity of the bodily organism resu
from the absolute unity of the soul.

Page 245, note 1. *Cf.* Fraser, *Locke's Essay*, 1, 448, note 3. This s
tion is numbered § 11 in Fraser's ed.

Page 245, note 2. After "Erdmann," add: Janet.

Page 246, note 1. After "Erdmann," add: Janet.

Page 247, lines 7–9. "*The self* constitutes identity real and physica
etc. This sentence contains the gist of the whole discussion. "*The sel*
or *the ego* which "constitutes identity real and physical" is "the p
supposition of that consciousness of the subject of itself to which t
conviction of its own reality attaches." Consciousness itself is an act
though involuntary modification or state of this self or ego. "*The p*
nomenon of self" is the ego's actual consciousness of itself, as the subj
of all its inner experience, and as the constant accompaniment of t
same. The self is accordingly by Leibnitz regarded as a real entity
substance, constituting in itself "real and physical identity" which
recognized as "personal" in consciousness. But it must be remember
that for Leibnitz substance is dynamic, its essence is action, and its r
identity consists in the continuity and connection of its activity. Wh
this activity becomes distinctly conscious or is brought into distinct co
sciousness, it constitutes moral and personal identity.

Page 249, note 1. Add: Janet reads: "étant."

Page 250, note 1. Add: *Cf.*, also, *The Immortality of the Soul*, Bk. I
chaps. 13, 14; *Philos. Writings*, ed. in 1 vol., London, 1662, pp. 116–1
(each treatise paged separately in this ed.).

Page 251, lines 12, 13, "Indifferent to every sort of matter." Jan
Œuvres philos. de Leibniz, 1, 224, in his note to this passage, say
"Aristotle believed also that the soul is not indifferent to every kind
matter, and avails himself of the fact to combat the doctrine of metem
sychosis." *Cf.* Περὶ Ψυχῆς, Bk. I., chap. 5, Berlin Academy ed., 40
31–411^{b} 30; ed. E. Wallace, Cambridge, 1882, pp. 44–57.

Page 251, note 1. After "Gerhardt," add: Janet.

Page 251, note 2. After "Erdmann," add: Janet.

Page 252, line 6 from bottom, "Two persons." On double and alte
nate personality, *cf.* James, *Psychology*, 1, 379–392.

Page 252, note 1. Add: Fraser's *Locke's Essay*, 1, 460, line 8.

Page 252, note 2. Add: Fraser's *Locke's Essay*, 1, 461, line
"Sober" = "sane."

Page 254, note 1. After "Erdmann," add: Janet.

Page 254, note 2. After "Erdmann," add: Janet.

Page 256, lines 17–20. "For since there is an individual diversity," c. *Cf. New Essays*, Bk. II., chap. 27, § 3, Th., *ante*, p. 239, and note 1; k. III., chap. 6, § 8, Th., *infra*, pp. 331, and 332, note 1. All true or tual difference is individual difference, consisting in some internal differentiating principle specifying the existence in this or that definite way, en though it first reveals itself only in "the course of time." With this ought is closely connected that of identity, on which *cf. ante*, p. 247, nd note to lines 7–9, *ante*, p. 760.

Page 257, note 1. After "Erdmann," add: Janet.

Page 258, line 10, "*Magnitude* which I call *imperfect*." An imperfect agnitude is one which, because of its infinite minuteness, admits of no easurement.

Page 259, note 1. After "Erdmann," add: Janet.

Page 259, note 3. After "Erdmann," add: Janet.

Page 261, note 1. Add: Pünjer, *Gesch. d. christlich. Religionsphi*-*osophie*, Braunschweig, 1880, 1, 123, Eng. trans., Edinburgh, 1887, 1, 65, in his account of the controversy of Vedelius and Joh. Musæus (*cf. nte*, p. 587, notes 1, 2), gives, from Musæus, another use of the term. ünjer says: "Ist aber die philosophische Prämisse allgemein, die theoogische partikular, dann muss sorgfältig untersucht werden, ob die etreffenden philosophischen Principien nothwendig und allgemein gelen (absolute et simpliciter necessaria) oder nur für ein besonderes Gebiet, *bedingungsweise* (secundum quid et *physice*)"; *i.e.* "But if the philosophical premiss is universal and the theological premiss is particular, then it must be carefully examined whether the philosophical principle in question is necessarily and universally valid (absolute et simpliciter necessaria), or applies only to a particular sphere and *conditionally* (secundum quid et *physice*)." [Italics are mine. — Tr.]

Page 261, note 2. Add: *Cf. New Essays*, Bk. II., chap. 21, § 55, *ante*, p. 208, and note to p. 208, line 25, *ante*, p. 755.

Page 262, note 1. Add: Leibnitz, *Observationes de Principio Juris*, § 13 (Dutens, *Leibnit. op. om.*, 4, Pt. III., 273), says: "Deum esse omnis naturalis juris auctorem (quod ait § 41) verissimum est, at non voluntate, sed ipsa essentia sua, qua ratione etiam auctor est veritatis," etc.

Page 262, note 2. Add: *Cf.*, also, Dr. Robinson's Lecture, "Moral Law in its relations to Physical Science and to Popular Religion," in Boston Monday Lectures — *Christ and Modern Thought* — 1880–1881, pp. 31–59.

Page 263, note 1. Add: Teubner, Leipzig, 1865. Vopiscus says of Bonosus: "Bibit, quantum hominum nemo. De hoc Aurelianus saepe dicebat: 'Non ut vivat natus est, sed ut bibat,' quem quidem diu in honore habuit causa militiæ. Nam siquando legati barbarorum undecunque gentium venissent ipsi propinabantur, ut eos inebriaret atque ab his per vinum cuncta cognosceret. Ipse quantumlibet bibisset, semp securus et sobrius et, ut Onesimus dicit, scriptor vitæ Probi, adhuc vino prudentior."

The reference in the next line, also taken from Vopiscus, *ibid.*, is Proculus, and not Bonosus, and the text should be corrected accordingl

PAGE 264, line 10, "Depends upon truth." *I.e.*, as Schaarschmi says, "upon the ever-equal reality of the ethical world-order."

PAGE 267, note 1. After "Erdmann," add: Janet.

PAGE 270, note 1. After "Erdmann," add: Janet.

PAGE 273, note 1. After "Erdmann," add: Janet.

PAGE 273, note 2. After "Erdmann," add: Janet.

PAGE 274, note 1. After "Erdmann," add: Janet. After "§ 15, add: So also Fraser's *Locke's Essay*, 1, 493.

PAGE 274, note 3. Add: Fraser's *Locke's Essay*, 1, 494, reads § 16.

PAGE 275, note 1. After "Erdmann," add: Janet. Fraser's *Locke' Essay*, 1, 494, reads: "betwixt the 100,000th and the 1,000,000th pa of it."

PAGE 276, note 1. Add: *Cf.* Gerhardt, *Leibniz. philos. Schrift.*, 3, 22 where Leibnitz says: "Il est encor à propos de considerer qu'il y a deu abus considerables dans les definitions, qu'on peut commettre en voulan former des idées: l'un est ce que l'excellent Jungius (*cf.* Appendix, *infra* p. 636, note 1), appelloit obreption, l'autre est ce que j'appelle chimerism par exemple si quelqu'un raisonnoit ainsi: il m'est permis de combiner le idées, et de donner un nom à ce qui en resulte; prenons donc l'idée d'un substance où il n'y ait rien que de l'etendue et appellons cela corps, don les corps qui sont dans la nature n'ont rien que de l'etendue, il y auroit la fois ces deux fautes dans ce raisonnement. *L'obreption* y seroit en c qu'ayant donné au mot: corps, la definition qui bon me semble (ce qu est en quelque façon arbitraire), je veux par après l'appliquer à ce qu d'autres hommes appellent corps. C'est comme si dans la Geometri quelqu'un donnoit à ce mot: ovale, la definition que d'autres Geometre donnent à l'Ellipse, et vouloit prouver par après que les ovales de M. de Cartes sont des sections du cone. *Le chimerisme* est icy d'avoir fait un combinaison impossible, car on n'accorde point qu'il est possible qu'il y ait une substance qui n'ait que de l'etendue. Je sçais que ces Messieurs veulent se justifier de l'obreption, en disant qu'on ne sçauroit concevoi autre chose dans les corps qui sont dans la nature, que ce qu'ils ont mis dans leur definition; mais en cela ils commettent une fausse supposition, ou bien ils confondent concevoir et imaginer; car il est bien vray qu'on ne sçauroit imaginer que ce qui est étendu, mais ils reconnoissent eux mêmes ailleurs qu'on conçoit des choses qui ne sont pas imaginables. Ouy, diront ils, mais ce n'est que la pensée qu'on ne peut point imaginer. Je reponds, qu'en cela ils font encor une autre fausse supposition, en prendant que rien ne sçauroit estre conçu que pensée et étendue, oublians 'ils parlent souvent eux mêmes de la force qui n'est pourtant ny l'un l'autre, outre qu'ils n'ont point prouvé qu'il n'y a rien de possible que que nous concevons."

Page 277, line 8, "Capable of existing together." Leibnitz, in argu-g against Locke's view of the passivity of the mind in relation to its simple ideas" and its activity in their combination into "complex eas," affirms that the mind "is active in reference to simple ideas," at the relations are objectively significant and valid through the deter-ination of the "supreme intelligence," that the mixed modes "may be al accidents," which do not become merely subjective from the fact at we perceive them by thought. According to Leibnitz, everything ally possible is in a certain sense an actual object of intelligence: to e divine intelligence an actual, to the human intelligence a universally ossible object. The external existence of this thought-object really adds othing to the being of this object, and alters nothing in the relation of e thought to it. *Cf.*, also, *New Essays*, Bk. II., chap. 12, § 3, Ph., *nte*, p. 147, and note to line 2 from bottom, "modes," *ante*, p. 748.

Page 277, note 1. Add: Fraser's *Locke's Essay*, 1, 500. In § 1, Locke as "*Fantastical* or *chimerical*," Fraser's ed., 1, 497; Bohn's ed., 1, 508.

Page 277, note 2, line 1. After "345^a 25," add: *οἱ δὲ περὶ Ἀναξαγόραν αὶ Δημόκριτον φῶς εἶναι τὸ γάλα λέγουσιν ἄστρων τινῶν· τὸν γὰρ ἥλιον ὑπὸ ὴν γῆν φερόμενον οὐχ ὁρᾶν ἔνια τῶν ἄστρων.*

Page 281, note 2. Add: The Greek text of the passages referred to n the note is as follows: Περὶ Ψυχῆς Γ, 6, 430^a 26–30: *ἡ μὲν οὖν τῶν διαιρέτων νόησις ἐν τούτοις, περὶ ἃ οὐκ ἔστι τὸ ψεῦδος· ἐν οἷς δὲ καὶ τὸ ψεῦδος αὶ τὸ ἀληθές, συνθεσίς τις ἤδη νοημάτων ὥσπερ ἓν ὄντων, καθάπερ Ἐμπεδοκλῆς φη "ᾗ πολλῶν μὲν κόρσαι ἀναύχενες ἐβλάστησαν," ἔπειτα συντίθεσθαι τῇ φιλίᾳ.* Περὶ Ἑρμηνείας I., 16^a 12: *σημεῖον δ' ἐστὶ τοῦδε· καὶ γὰρ ὁ τραγέλαφος ημαίνει μέν τι, οὔπω δὲ ἀληθὲς ἢ ψεῦδος, ἐὰν μὴ τὸ εἶναι ἢ μὴ εἶναι προστεθῇ, ἁπλῶς ἢ κατὰ χρόνον.* *Cf.*, also, *New Essays*, Bk. III., chap. 3, *infra*, p. 310–318, and the notes, especially pp. 310, note 2, 317, note 3.

Page 281, line 17, "Possibility." Schaarschmidt states that Christian Wolf placed this definition of truth here given by Leibnitz at the head of is collected science. According to Wolf, *Log. Disc. prælectt.*, philoso-hy is the science of the possible so far as it can be. Ueberweg, *Hist. of Philos.*, Eng. trans. by Morris, New York, 1871, Vol. 1, p. 4, gives it, *Philos. Rationalis. Disc. Prælim.*, § 29: "philosophia est scientia possi-bilium, quatenus esse possunt."

Page 281, note 1. After "Essays," add: Bk. III., chap. 3, § 15, Th., *nfra*, pp. 315 *sq.*, especially p. 317, note 3; after "chap. 5," add: *ad fin.*, *infra*, p. 452, and note 1.

Page 282, note 1. After "Erdmann," add: Janet.

Page 282, note 2. After "Erdmann," add: Janet.

Page 283, line 17, "Ottavio Pisani." An Italian jurist, who publishe in Italian his *Lycurgus seu leges promptam justitiam promoventes*; tran lated into German, and published, Sulzbach, 1666, 12mo. Leibnitz me tions him in his *Bedenken welchergestalt den Mängeln des Justiz-Wesen* IN THEORIA *abzuhelfen, cf.* Guhrauer, *Leibnitz's deutsche Schrift.*, 1, 25 also Beilagen, *ibid.*, 42; Dutens, *Leibnit. op. om.*, 4, Pt. 3, 230–234 (Lati trans. of the same, regarding which, *cf.* Guhrauer, *op. cit.*, 1, 41 *sq.* — O p. 41, *op. cit.*, line 9 from bottom, "220–24" should read: 230–234, a above cited, the present reading being a typographical error).

Page 283, note 1. After "Erdmann," add: Janet.

Page 284, line 17, "Inclinations." Schaarschmidt says that "in thes remarks lies the germ of the recognition of the law of association, which Johann Gebhard Ehrenreich Christian Maass, 1766–1823, Professor o Philosophy at Halle University, "further elaborated in his *Versuch übe die Einbildungskraft*, Halle and Leipzig, 1797; afterwards J. F. Frie 1773–1843, in his *Neue Kritik der Vernunft*, 2d ed., 1828–1831, p. 148 *sq.* and which finally J. F. Herbart, 1776–1841, and his school have attempte more closely to investigate and establish." F. H. Bradley, *The Princi ples of Logic*, pp. 279, 297, 312, 313, refers to a portion of Maass' discus sion. *Cf.*, also, Hamilton's *Reid*, Notes D** and D***, 2, 882–917, espe cially 890, 899, 913 *sq.* Maass followed Wolff's *Psych. Emp.*, Frankfor and Leipzig, 1732, *ed. Nova*, 1738; but he may also have been influence somewhat by Leibnitz, as the *New Essays* were published in 1765 b Raspe, and therefore accessible for nearly thirty years before his ow work appeared.

Page 284, note 1. After "Erdmann," add: Janet.

Page 284, note 2. After "Erdmann," add: Janet.

Page 284, note 3. After "Erdmann," add: Janet.

Page 284, note 4. After "Erdmann," add: Janet.

Page 286, note 1. Add: Recently Mr. R. L. Garner has been investi gating the language of monkeys, with the aid of the phonograph, an published an account of his investigations in an interesting book entitle *The Speech of Monkeys*, New York, Chas. L. Webster & Co., 1892. A unfavorable notice of the book appeared in "The Nation," October 6 1892, p. 267 b, the gist of which appears in the following sentence: "A a scientific record of original discoveries, it has little value."

Page 288, note 1. Add: *Cf. New Essays*, Bk. III., chap. 3, § 5, Th. *infra*, pp. 307, 308. Also, Hamilton, *Metaphysics*, Lect. XXXVI., pp 492 *sq.*, Boston, 1875.

Page 297, line 11, "Hypothesis," etc. Leibnitz's hypothesis has bee wholly verified by modern philology.

Page 297, note 1. Add: For an interesting account of Leibnitz' services to comparative philology, *cf.* Max Müller, *Lects. on the Scienc*

Language, 2d ed., London, 1862, Lect. 4, pp. 131–135; New York, as. Scribner, 1862, pp. 135–139. *Cf.*, also, Guhrauer, *Leibnitz, Eine ographie*, 2, 126 *sq.;* Foucher de Careil, *Œuvres de Leibniz*, 7, 519 *sq.*, ough draft of a memorial of Leibnitz concerning the study of lan-ages . . . in the Russian Empire.

Page 298, note 1, line 3 from end. After "p. 409," insert: "Lites de ehmianis sententiis inanes esse censeo, et *Boehmium* nec sibi, nedum is intellectum," *i.e.* etc.

Page 300, note 3. After "Erdmann," add: Janet.

Page 300, note 4. After "Erdmann," add: Janet.

Page 300, note 5. After "Erdmann," add: Janet.

Page 304, note 1, line 8. After "Dutens, *op. cit.*, Vols.," add: 4, Pt. ., p. 56: Ab insigni apud Bremenses Theologo Gerhardo Meiero, qui t hoc obiter dicam) hortatu meo præclarum opus aggressus est *Glossarii xonici* titulo, in quo origines Germanicarum vocum multas eruet illus-bitque, nec pauca non pervulgata proferet in lucem." At end of note, d: Janet, *Œuvres philos. de Leibniz*, 1, 274, note 3, gives the dates of eier's birth and death, 1646–1680, and titles of his "principal philo-phical works": *Compendium logicæ divinæ; Aranearum telas divinæ istentiæ testes; De dubitatione sceptica et cartesiana.*

Page 304, note 2. Add: The date of Schilter's death being 1705, and e mention of the same in the text as having "just" occurred, is evi-nce that Leibnitz at least briefly touched up this part of the *New ssays* as late as 1705.

Page 308, line 10 from bottom. Read: *Greathead*, instead of "*large ad;*" and line 8 from bottom, read: great, instead of "large."

Page 308, line 3 from bottom. After "wormwood," insert: (*absin-ium*).

Page 313, line 8, "Living rational being." *Cf.* Trendelenburg, *Histor. eitr. z. Philos.*, 3, 53, 54.

Page 316, note 1. After "(Bohn's ed.)," add: Fraser's *Locke's Essay*, 28.

Page 317, note 1. Add: *cf. New Essays*, Bk. IV., chap. 4, § 5, Th., *fra*, p. 445, note 1.

Page 317, note 2. Add: *Cf.*, also, *New Essays*, Bk. II., chap. 21, § 3, h., *ante*, p. 175, and note to p. 175, line 18, *ante*, p. 751.

Page 317, note 3. Add: *Cf.*, also, Prantl, *Gesch. d. Logik*, Bd. 1, . 516, note 33, where he refers to Cicero, *Off.*, I., 2, 7; *Fin.*, II., 2, 5; *. orat.*, I., 42, 189: "est enim definitio earum rerum, quæ sunt eius rei ropriæ quam definire volumus, brevis et circumscripta quædam explicatio"; II., 39, 164; III., 29, 113; *Orat.*, 33, 166; Top. 5, 26; Quin *Inst.*, VII., 3, 15.

Page 318, note 1. Add: Fraser's *Locke's Essay*, 2, 29.

Page 319, note 2. Add: Erdmann, 443–445.

Page 321, note 4. After "chap. 9, *ad med.*," add: "'How can th be?' cried Don Quixote; 'didst thou not tell me that thou *sawest* h winnowing wheat?' 'Take no heed of that, sir,' replied the squire; 'f the fact is, her message, and the sight of her too, were both by *hearsa* and I can no more tell who the lady Dulcinea is than I can buffet tl moon.'"

Page 322, note 1. Add: Aldrich, *Artis logicæ rudimenta*, ed. H. Mansel, 3d ed., Oxford, 1856, pp. 30, 31 (diagram on p. 31).

Page 323, note 1, line 3. After "Erdmann," add: Janet.

Page 324, note 2. Add: *Hypoth. phys. nova*, § 57; Gerhardt, 4, 20 *Cf.*, also, *New Essays*, note to p. 47, lines 18, 19, *ante*, p. 726.

Page 326, note 1. Add: *Cf.* note to p. 43, line 14, *ante*, p. 72 "Leibnitz," says Schaarschmidt, "makes here a weighty remark. A demonstration appeals only to the (real) possible and to that which in logical way inferred from the same is so far thought-wise necessar reality or the actual, on the other hand, can be known only historical or empirically, not, however, philosophically."

Page 326, note 2. Add: Janet, *Œuvres philos. de Leibniz*, 1, 29 agrees with the reading of Jacques.

Page 329, note 1, line 2. After "1888," add: Paris Academy ed., C. M. Galisset, 7th ed., 1862, p. 140; *Corpus Juris Civilis*, Berlin, Wei mann, 1893 (*Inst. of Justinian*, ed. by Paul Krueger), Vol. 1, p. 13 line 3, after "1890," add: *Collectio Librorum Juris Antejustiniani*, e Krueger, Mommsen, and Studemund, Vol. 1, pp. 50, 51, 3d ed., Berli Weidmann, 1891; line 4, after "1870," add: *Corpus Juris Civi* (*Digest*, ed. by Mommsen, and paged separately), Vol. 1, p. 112. end of note, add: Rudolph Sohm, *Institutes of Roman Law*, trans. fro 4th German ed., by Jas. Cranford Ledlie, Oxford, Clarendon Press, 189 pp. 258–268.

Page 332, note 1. Add: For Hegel's interpretation of Leibnitz's pri ciple of individuation,—*principium individuationis*,—(*cf. New Essay ante*, p. 239, note 1) *cf.* Wallace, *The Logic of Hegel*, 2d ed., Oxfor Clarendon Press, 1892, pp. 217, 218.

Page 333, note 1. Add: Fraser's *Locke's Essay*, 2, 68.

Page 334, note 1. Add: On the natural order in the vegetable kin dom, Schaarschmidt cites J. H. Burckhardi, *Epist. ad Leibnitium*, Wolffe büttel, 1703. *Cf.*, also, *Epist. G. G. Leibnitii ad A. C. Gackenholtziu M.D., de methodo Botanica*, § 10; Dutens, *Leibnit. op. om.*, 2, Pt. II., 17

Page 335, note 1, line 1. After "50," add: Fraser's *Locke's Essay*, 59. So also Coste's translation, p. 360, ed. Amsterdam, 1742, Vol. 3, 29, ed. in 4 vols., Amsterdam, 1774.

Page 337, note 3. Add: A 5th ed., Hamburg, 1887.

Page 343, note 1. Add: Also Gerhardt, *Leibniz. math. Schrift.*, I., 2 [ol. 2], 1–208, *Briefwechsel zwischen Leibniz und Hugens van Zulichem.* so an earlier ed. in Pt. II. of *Christ. Hugenii aliorumque seculi XVII. orum celebrium exercitationes mathematicæ et philosophicæ. Ex manuiptis in bibliotheca Lugduno-Batavæ servatis edidit.* P. I. Uylenbroek, gæ Comitum, 1833. On the relation of Gerhardt's ed. to that of Uylenoek, *cf.* Gerhardt, *op. cit.*, II., 2 [Vol. 2], 9, 10. Gerhardt says, p. 10: "s hätte mithin in jedem Falle auf die Sammlung Uylenbroek's Rücksit genommen werden müssen, der die Leibnizischen Originale vor s hatte." *Cf.*, also, *New Essays*, note to p. 16, line 22, *ante*, p. 723.

Page 344, note 4. Add: Professor Schaarschmidt having kindly sent n Ulrich's note, and Ulrich's translation being rare and generally inacsible, it is here given: "Dieser Knabe ward 1661 in einem Alter von n Jahren in einem Walde von Litthauen von den Jaegern unter den ren gefunden. Es war noch ein anderer Knabe bei ihm, der aber den Jgern entwischte. Dieser wehrte sich als man ihn fangen wollte anfängl mit seinen Nägeln und Zähnen ungemein tapfer, musste aber zuletzt Gewalt nachgeben. Er war übrigens wohl proportionirt, weiss, hatte nde Haare und eine angenehme Gesichtsbildung; man kommte ihn aber ch nichts bändigen, vielweniger zu Kleidung und menschlicher Nahrg gewöhnen. Er erhielt in der Taufe den Namen Joseph Ursinus." The story is of course fabulous, it being impossible during the winter t live in Poland without clothes, even were it anywise probable that rs would live with children without eating them."

Page 349, note 1, line 3 from bottom. Dele "2d ed." — since, accordi to the author's "Avertissement," the work "is not a 2d ed." of his lier work, entitled *De la philosophie scholastique*, 2 vols., Paris, 1850, t an entirely new and independent work.

Page 353, line 5, "Prophetic vision." Leibnitz wrote a critical essay the Story of Balaam, which is found in Dutens, *Leibnit. op. om.*, 4, II., 275–278. Wilhelm Brambach has published a monograph, ented *Gottfried Wilhelm Leibniz Verfasser der Histoire de Bileam*, Leipzig, 87, in which he gives an account of the various arguments for and inst its Leibnitzian authorship, maintains that Leibnitz was the author, l gives Leibnitz's approved text of the piece.

Page 357, note 1. Add: Fraser's *Locke's Essay*, 2, 86.

Page 359, note 1. Add: Fraser's *Locke's Essay*, 2, 88.

Page 380, note 1. Add: On More, *cf.* Tulloch, *Rational Theology d Christian Philosophy in England in the 17th Century*, Edinburgh, Wm. Blackwood & Sons, 1872, 2, 303–409, the "ethereal vehicles," 3 the "spirit of nature," 397.

Page 382, note 1. Add: *Cf. New Essays*, Bk. I., chap. 1, *ante*, p. and note to p. 67, lines 3, 4, *ante*, p. 732.

Page 382, note 2. Add: *Cf.* also, Dutens, *Leibnit. op. om.*, 6, Pt. 315, Leibnitiana, No. C., where Leibnitz says: "Henricus Morus stat præexistentiam *animarum*, sive quod animæ creatæ fuerint cum mun quam sententiam Plato, Origines, aliique jampridem foverunt. M opinio est, omnia, ut sic dicam, plena esse animarum vel analogar naturarum, et ne brutorum quidem animas interire."

Page 386, note 1. Instead of "Jacques reads," read: Jacques a Janet read, etc.

Page 387, note 1. Add: In the "Bulletin des Sciences Mathén tiques, 2d Series, Vol. 16, 1892, Pt. I., p. 18, in a review of C. Huyge *Œuvres complètes*, La Haye, 1888 *sq.*, the following statement occu "La courbe $a^2y = x^2(a-x)$ rentre dans la catégorie générale des cour $a^{p+q-r}y^r = x^p(a-x)^q$, qu'on appelle les *perles* de de Sluse. Elle est u cubique à centre (au point d'inflexion $x = \frac{1}{3}a, y = o$)." *Cf.*, also, the lett in this ed. of Huygens, Nos. 401, 403, 408, 419, 434, 436, referred to this review. In letter 461, the review goes on to say: "il est quest d'un rapport remarquable entre les deux perles $a^2y^2 = x^3(a-x)$ et y $x^3(a-x)$." *Cf.*, also, letter 435.

Page 388, lines 23, 27, 32, "§§ 23, 23, 24." These sections are number respectively, §§ 23, 24, 25, in Fraser's *Locke's Essay*, 2, 142–143; alsc Locke, *Philos. Works*, Bohn's ed. 2, 108–109; and in Coste's Fre trans., Amsterdam, 1742, pp. 409, 410, 4 vols. ed., Amsterdam, 1774 248, 249.

Page 392, lines 6, 7. "The majority of the mixed modes nowhere e together." The French text of all the editions is: "La pluspart modes composés n'existent nulle part ensemble." The grammatical c fusion of a singular subject and plural verb is probably occasioned by too condensed summary of Locke's statement, *i.e.* "Another reason t makes the defining of mixed modes so necessary, especially of mc words, is what I mentioned a little before, viz. that it is the only v whereby the signification of the most of them can be known with c tainty. For the ideas they stand for, being for the most part such wh component parts nowhere exist together," etc. (Fraser's *Locke's Ess* 2, 158; Locke, *Philos. Works*, Bohn's ed., 2, 122); in Coste's tra ed. 1742, p. 421, ed. 4 vols., 1774, 3, 276: "Une autre raison rend la définition des *Modes mixtes* si nécessaire, et sur-tout celle mots qui appartiennent à la Morale, c'est ce que je viens de dire en p sant, que c'est *la seule voie par où l'on puisse avoir certainement la nification de la plupart de ces mots.* Car la plus grande partie des id qu'ils signifient, étant de telle nature qu'elles n'existent nulle part ens ble," etc.

Page 404, note 1. Add: For a specimen of Euclid reduced to syllo- ms, extracted from the very curious and rare *Analyses Geometricæ* of rlinus and Dasypodius, *cf.* Aldrich, *Artis Logicæ Rudimenta*, ed. nsel, Oxford, 1856, 3d ed., Appendix, note L, *ad fin.*, pp. 264–266. William Hamilton calls Herlinus and Dasypodius "zealous but thick- ded logicians," Aldrich, *op. cit.*, p. 248, note r (Mansel). The 5th position of the 1st Bk. is also analyzed by Mill, *Logic*, Bk. II., chap. pp. 162, 163, 8th ed., New York, Harper and Bros., 1881.

Page 405, note 1. After "Erdmann," add: Janet.

Page 405, note 2. After "Erdmann," add: Janet.

Page 408, note 1. Add: For a brief account of the Ramist-Aristotelian ntroversy, *cf.* Pünjer, *Gesch. d. Christlich. Religionsphilos.*, 1, 89–92; ng. trans., *Hist. of the Christian Philos. of Religion*, 1, 118–123.

Page 412, note 1. After "Erdmann," add: Janet.

Page 414, note 1. After "Erdmann," add: Janet.

Page 414, note 2. Add: Fraser, *Locke's Essay*, 2, 185.

Page 425. At end of first paragraph of note continued from p. 424, ter "1, 187," add: letter to Conring, March 19, 1678, *ibid.*, 1, 199; also e writing with "neither superscription nor place nor date," *ibid.*, 4, 74 *sq.*, especially 277, 278.

Pages 428, 429. "Certain theologians claim that the fire of hell burns o separated souls." *Cf. New Essays*, Preface, *ante*, p. 62, and note to ne 10 from bottom, *ante*, p. 729, 730.

Page 431, line 10 from bottom. "Et quidquid Schola finxit otiosa." have not been able to find the author or source of the Latin line.

Page 432, line 11, "*Lignum nephriticum.*" A term used by the old harmacologists, signifying a wood, supposed to be that of the horse- dish tree, which has been used in decoction for affections of the kid- eys, — *Nephritic wood*, from the Greek νεφρός, a kidney.

Page 434, note 1. Line 2, after "1890)," add: *Collectio Librorum uris Antejustiniani*, ed. Krueger, Mommsen and Studemund, Berlin, Weidmann, 1891, 1, 86; and line 6, after "1888)," add: *Corpus Juris Civilis*, Berlin, Weidmann, 1893, 1, 23 b.

Page 445, note 1. Add: On the history and significance of the terms φαν- ασία, φάντασμα, "phantasma," *cf.* Siebeck, *Gesch. d. Psychologie*, Gotha, 880, 1884, *passim*. Leibnitz in his letter to Thomasius, Feb. 16, 1666, Gerhardt, *Leibniz. philos. Schrift.*, 1, 8, says: "Omnis color est impressio n sensorium, non qualitas quædam in rebus, sed extrinseca denominatio, eu ut Th. Hobbes appellat, phantasma." On Hobbes' use of the term, f. his *Works*, and Lange, *Hist. of Materialism*, 2d ed., 1, 288–289. For Thomas Aquinas' use of the term, *cf.* Ueberweg, *Hist. of Philos.*, New York, 1875, 1, 449.

PAGE 447, note 1. Add: Fraser, *Locke's Essay*, 2, 237–239, and *ibid.*, 2, 73, note 3: "An idiot, 'Such men do chaungelings call, chaunged by faries' theft.' Spenser, *Faerie Queen*, Bk. I., canto X also Shakespeare, *Midsummer Night's Dream*, ii., I., 21."

PAGE 450, note 1, line 4 from bottom. After "pp. 312–314," add: al G. Croom Robertson, *Philos. Remains*, Williams & Norgate, 1894, p 274-278.

PAGE 462, note 1. Add: *Cf.* "Leibnitz and Protestant Theology," Professor John Watson, of Queen's University, Kingston, Canada, "The New World," March, 1896, Vol. 5, pp. 112–122. *Cf.*, also, *N* *Essays*, Bk. IV., chap. 7, § 11, Th. (2), *infra*, p. 474, and note 1; cha 17, § 23, Th. (2), *infra*, p. 579, and note 1.

PAGE 464, line 6, "The number of the axioms." Mansel, in the Appe dix to his ed. of Aldrich, *Artis Logicæ Rudimenta*, 3d ed., Oxford, 18 p. 258, says: "The numerous attempts of Geometers to diminish or rid of their axioms have been steps in a wrong direction. The numb of axioms, instead of being diminished, should be very considerably i creased; and the errors that have hitherto prevailed on the nature a foundation of Geometrical reasoning have been mainly owing to the ma ner in which many indispensable assumptions have been either omitt altogether, or concealed among the definitions."

PAGE 465, note 1. Add: *Cf.* also addition to this note, *ante*, p. 768.

PAGE 474, note 1. Add: *Cf. New Essays*, Bk. IV., chap. 6, *ad fi* *ante*, p. 462, note 1, and addition thereto above; chap. 17, § 23, Th. (*infra*, p. 579, and note 1, and addition thereto, *infra*, p. 773. Dieckho *Leibnitz Stellung zur Offenbarung*, Rostock, 1888.

PAGE 481, note 1. Add: For Aristotle on the "middle term," Wallace, *Outlines of the Philos. of Aristotle*, 3d ed., 1883, §§ 23, especially the latter, and the passage of Aristotle there quoted. For t history of the term, *cf.* Prantl, *Gesch. d. Logik*.

PAGE 482, lines 1–3. The text should read: "Made him reject alt gether their use in the establishment of the truth, and goes as far as make them a party to confusion [of ideas] in conversation."

PAGE 483, note 1. After "*Princip. Philos.*, II., §§ 1, 4, 11," ad ed. Cousin, 3, 120, 123, 129.

PAGE 484, note 1, line 2. After "§§ 16 *sq.*," add: ed. Cousin, 3, 133

PAGE 486, note 1. Add: *Corpus Juris Civilis* (*Digest* ed. Mommse and paged separately), Berlin, 1893, 1, 718 b.

Page 486, note 2. Line 3, after "locupletiorem," add: *Corpus Ju* *Civilis*, Berlin, 1893, 1, 873 b; after "Tit. VI., 14," add: *ibid.*, 1, 169 line 6, after "lucrum," add: *ibid.*, 1, 300 a; after "§ 4, ad fin.," add: 190 a.

Page 487, note 1. After "Tit. XVII., 1," add: *Corpus Juris Civilis*, rlin, 1893, 1, 868 a.

Page 487, note 2. Line 2, after "1888)," add: *Collectio Librorum ris Antejustiniani*, Berlin, Weidmann, 1893 (*Inst.* ed. Krueger), 1, b; at end of note, add: ed. 1893, 1, 120 a, 593 a.

Page 487, note 4. At end, add: On Sennert, *cf.* Lasswitz, *Gesch. d. omistik*, 1, 436–454.

Page 492, note 3. Line 4, after "24, *ad fin.*," add: ed. Mommsen, 93, 599 b; line 6, after "*ib.*, 26," add: *ib.*, 599 b; line 7, after "55," d: *ib.*, 869 b; line 8, after "*ib.*, 129," add: *ib.*, 871 b.

Page 495, note 1. Add: *Cf.*, also, the quotation from the *Théodicée*, II., § 184, *infra*, p. 635, note 2, *ad fin.*

Page 495, note 2. Add: *Cf.*, also, Leibnitz's letter to Conring (with- t place or date; probably written at the beginning of 1670 — Gerhardt's te), Gerhardt, *Leibniz. philos. Schrift.*, 1, 160: Ego suppono cum rneade (et Hobbius consentit) Justitiam sine utilitate propria (sive æsente sive futura) summam esse stultitiam longe enim absunt ab mana natura Stoicorum et Sadducæorum de virtute propter se colenda perbæ jactationes. Ergo omne justum debet esse privatim utile, sed m Justitiæ forma consistat in publica utilitate, sequitur quod non pos- t accurate demonstrari hæc propositio: *homo prudens debit semper agere od justum est*, nisi demonstretur esse quendam perpetuum vindicem blicæ utilitatis (nam aliorum oculi metusque non ultra ligabunt pru- ntem, quam quousque juvare aut nocere possunt) id est Deum, cumque nsu manifestum sit, eum non esse semper vindicem in hac vita, super- sse aliam, id est *esse aliquem Deum, et humanam animam esse immor- lem*."

Page 496, line 7 of note continued from p. 495. After "1877," add: . L. Lincoln, "Marcus Aurelius Antoninus," in *In Memoriam John arkin Lincoln, 1817–1891*, pp. 484–502, Boston, Houghton, Mifflin & o., 1894.

Page 506, note 1. After "Bohn's ed.," add: Fraser, *Locke's Essay*, , 315. Coste's translation of Locke's Essay, ed. 1742, p. 519, 4 vol. ed., 774, 4, 131, reads: "finis."

Page 510, note 1. Add: The note here referred to (*cf.*, also, Coste's anslation of Locke's Essay, ed. 1742, p. 523, note 2, 4 vol. ed. 1774, 4, 41, note 2; translation of a part of the note, Fraser *Locke's Essay*, 2, 21, note 2), reads thus: "Ici M. Locke excite notre curiosité, sans ouloir la satisfaire. Bien des gens s'étant imaginés qu'il m'avoit com- uniqué cette manière d'expliquer la création de la matière, me priérent eu de tems après que ma traduction eut vu le jour, de leur en faire part; ais je fus obligé de leur avouer que M. Locke m'en avoit fait un secret moi-même. Enfin long-tems après sa mort, M. le Chevalier *Newton*, à

qui je parlai par hazard de cet endroit du livre de M. Locke, me découv tout le mystère. Souriant, il me dit d'abord que c'étoit lui-même c avoit imaginé cette manière d'expliquer la création de la matière, que pensée lui en étoit venue dans l'esprit un jour qu'il vint à tomber s cette question avec M. Locke et un seigneur Anglois [Le feu Comte *Pembroke,* mort au mois de Février de la présente année, 1738]. Et vo comment il leur expliqua sa pensée. 'On pourroit,' dit il, 'se former quelque manière une idée de la création de la matière en supposant q Dieu eût empêché par sa puissance que rien ne pût entrer dans u certaine portion de l'espace pur, qui de sa nature est pénétrable, étern nécessaire, infini ; car dès-là cette portion d'espace auroit l'impénét bilité, l'une des qualités essentielles à la matière : et comme l'espace p est absolument uniforme, on n'a qu'à supposer que Dieu auroit com muniqué cette espece d'impénétrabilité à une autre pareille portion l'espace, et cela nous donneroit, en quelque sorte, une idée de la mobili de la matière, autre qualité qui lui est aussi très-essentielle.' Nous voi maintenant délivrés de l'embarras de chercher ce que M. Locke av trouvé bon de cacher à ses lecteurs : car c'est là tout ce qui lui a don occasion de nous dire, 'Que si nous voulions donner l'effort à notre espr nous pourrions concevoir, quoique d'une manière imparfaite, comme la matière pourroit d'abord avoir été produite,' etc. Pour moi, s'il m'e permis de dire librement ma pensée, je ne vois pas comment ces deu suppositions peuvent contribuer à nous faire concevoir la création de matière. A mon sens, elles n'y contribuent non plus qu'un pont cont bue à rendre l'eau qui coule immédiatement dessous, impénétrable à u boulet de canon, qui venant à tomber perpendiculairement d'une haute de vingt ou trente toises sur ce pont y est arrêté sans pouvoir passer travers pour entrer dans l'eau qui coule directement dessous. Car da ce cas-là, l'eau reste liquide et pénétrable à ce boulet, quoique la solidi du pont empêche que le boulet ne tombe dans l'eau. De même, la pui sance de Dieu peut empêcher que rien n'entre dans une certaine po tion d'espace, mais elle ne change point par-là la nature de cette portic d'espace, qui restant toujours pénétrable, comme toute autre portion d'e pace, n'acquiert point en conséquence de cet obstacle, le moindre deg de l'impénétrabilité qui est essentielle à la matière," etc.

Fraser, *Locke's Essay,* 2, 321, 322, note 2, above referred to, states th "the idea of the creation of matter which Locke had in view in th curious passage has occasioned various conjectures," and he refers t that of Leibnitz in this passage, to Reid's in *Intell. Powers,* Essay II 10 [ed. Hamilton, 8th ed., 1880, 1, 287 a], and to Dugald Stewart, *Essa* II., chap. 1, p. 63. Reid thinks Locke agrees with Berkeley ; Stewa is almost tempted to think that Locke's idea of matter is "somewh analogous to that of Boscovich." Fraser says that "this 'dim concep tion,' if it means that the material world may be resolved into a con stant manifestation of God's power to man's senses, conditioned b space, so far coincides with Berkeley's account of it ; he emphasises th sensuous manifestation of divine power in selected spaces, as well a

t ultimate dependence of space on sense. Newton, it seems, suggested at 'creation of matter' means, God causing in sentient beings the se-perception of resistance, in an otherwise pure space, — a theory in to Berkeleyism in its recognition of the Supreme Power, and to scovich in its conception of the effect."

PAGE 513. At end of note, add: translation, Appendix, *infra*, p. 7 *sq.*

PAGE 522, note 1. After "Gerhardt," add: Janet.

PAGE 534, note 1. Line 1, after "Tit. VII., 1," add: *Collectio Li-orum Juris Antejustiniani*, ed. Krueger, Mommsen and Studemund, erlin, Weidmann, 1878, 2, 52; line 5, after "Tit. I., 33," add: *Corpus uris Civilis* (*Digest*, ed. Mommsen), Berlin, 1893, 1, 667 b.

PAGE 534, note 2. Add: ed. Mommsen, 1893, 1, 665 a.

PAGE 534, note 3. Add: ed. Cousin, 1, 148.

PAGE 545, note 2. Add: New ed. of Bolsec, *Vie de Calvin*, by P. L. hastel, Lyons, 1875.

PAGE 548, note 3. Add: Fraser, *Locke's Essay*, 2, 379.

PAGE 552, note 1. Add: *Cf.*, also, note to *New Essays*, Preface, *ante*, . 51, lines 11–13, *infra*, p. 727; also, *New Essays*, Bk. IV., chap. 20, 11, Th., *infra*, p. 613, and note 1.

PAGE 567, note 1, line 3. After "296," add: Bohn's ed.; Fraser, *ocke's Essay*, 2, 403–405.

PAGES 575, 576, note 1. Add: The doctrine set forth in the note is losely allied to the *inner light* of the Quaker theology. *Cf. New Essays*, k. IV., chap. 19, *infra*, p. 599, and note 1; also, Bancroft, *Hist. of the nited States*, Centenary ed., 1876, Vol. 2, pp. 87–92.

PAGE 579, note 1. Add: *Cf. New Essays*, Bk. IV., chap. 6, *ad fin.*, *nte*, p. 462, note 1; 7, § 11, Th. (2), *ante*, p. 474, note 1; also, on the eneral philosophical question, "The Roots of Agnosticism," by Pro-essor James Seth, in "The New World," September, 1884, Vol. 3, pp. 58–471; and on the special problem here under discussion, "Leibnitz nd Protestant Theology," by Professor John Watson, in "The New Vorld," March, 1896, Vol. 5, pp. 102–122. Professor Watson's state-nent and criticism of Leibnitz's doctrine is admirable. He holds that eibnitz's distinction of two kinds of truth, truths of reason and truths of act, cannot be maintained, that "for a Being of infinite knowledge the ossible and the actual are coincident," that "the only possible reality is hat which is capable of being actualized," that there can be no choice etween hypothetical worlds, and that the existing world is the only pos-ible one, and is "necessary just because it is the expression of an abso-ute reason."

Page 581, note 1. At end, add: Further references on the wh subject: Lange, *Gesch. d. Materialismus*, 2d ed., 1, 182 *sq*; Eng. tran 1, 218 *sq.;* E. Renan, *Averroès et l'Averroisme*, Paris, 1852; 3d ed., Par 1869.

Page 585, line 6, "Motives of credibility." *Cf. New Essays*, Bk. I chaps. 16, § 14, Th., *ante*, p. 554; 17, § 23, Th. (2), *ante*, p. 579, a note 1. *Cf.*, also, Dutens, *Leibnit. op. om.*, 1, 680, where Leibnitz say "Motifs de croyance ou de crédibilité (comme ils les appellent) c'est dire, outre les raisons explicables de nôtre Foi, qui ne sont qu'un am d'argumens de différens degrés de force, et qui ne peuvent fonder to ensemble qu'une foi humaine, ils demandent une lumière de la grace Ciel, qui fasse une entière conviction, et forme ce qu'on appelle la F divine," *i.e.* "Motives of belief or of credibility (as they call them), th is to say, besides the explicable reasons of our faith, which are only mass of arguments of different degrees of force, and which all togeth can establish only a human faith, they demand a light of the grace heaven, which produces a complete conviction, and forms what is call the divine faith."

Page 588, lines 16–19. "What is only necessary by a physical nece sity (*i.e.* founded upon induction from that which is customary in natur or upon natural laws which, so to speak, are of divine institution)," e *Cf. ante*, p. 261, note 1, and addition thereto, *ante*, p. 761.

Page 606, note concluded from p. 605. Line 10, after "April 20– 1669, G. 1, 27," add: Appendix, *infra*, 650; line 20, after "p. 33," ad translation, Appendix, *infra*, 631–651.

Page 613, note 1. Line 1, after "p. 51, line 11," add: and note there *infra*, p. 727; line 2, after "§§ 52, 90," add: ed. Cousin, 3, 217, 25 line 5, after "§ 48 *sq.*," add: *ibid.*, 3, 214 *sq.*

Page 634, line 24, "Gilbert." William Gilbert, 1540–1603, priva physician to Queen Elizabeth, was "the first real physicist and positive methodical experimenter known in the History of Physics before Kepl and Galileo." By the experiments and discoveries published in his *magnete magneticisque corporibus et de magno magnete tellure, Physiolog nova*, London, 1600, later editions, Sedan, 1628, 1633, Frankfort, 162 1638, he became "the founder of the doctrine of magnetism and electri ity." He called the latter *vis electrica*. For an account of his philos phy, *cf.* Lasswitz, *Gesch. d. Atomistik*, 1, 315–321; for his view of vacuun *ibid*, 319.

Page 634, line 24, "Gassendi." For Gassendi on the vacuum, *cf.* Las witz, *Gesch. d. Atomistik*, 2, 136 *sq.*, 168–169.

Page 634, line 24, "Gericke." *Cf. ante*, p. 127, note 2. An accour of his views is given by Lasswitz, *Gesch. d. Atomistik*, 2, 293–300.

Page 634, line 25, "Digby." *Cf. ante*, p. 83, note 1. On Digby's ph losophy, *cf.* Lasswitz, *Gesch. d. Atomistik*, 2, 188–207; on his view of th vacuum, *ibid*, 199.

AGE 641, line 11, “Anglus.” *Cf. ante*, p. 634, note 1. A peculiar ion of White's concerning the state of the soul separated from the y, involved him in a controversy with the Bishop of Chalcedon. ite wrote two tracts on the subject: *De Medio Animarum Statu*, is, 1653, 8vo, Agr. 1659, 8vo; *Responsio ad duos Theologos Parisi- es Hen. Holdenum, et alium de Medio Animarum Statu*, 1662, 8vo. former, together with Hobbes' *Leviathan*, was censured by the use of Commons in 1666. Archbishop Francis Blackburne, 1705–1787, es an extended account of both tracts in his own *Historical View of Controversy concerning an Intermediate State*, 1st ed., 1765, 2d, much arged, 1772; in Vol. 3 of his *Works, Theolog. and Miscellaneous*, 7 s., 1804. Hobbes and White frequently engaged in disputations, in ich White commonly proved himself the abler dialectician.

AGE 657, note 1. Add: On Leibnitz's dynamical views, *cf.* P. Harzer, eibniz' dynamische Anschauungen, mit besonderer Rüchs. auf d. form des Kräftemaasses u. d. Entwickelung des Princ. der Erhaltung Energie,” in “Vierteljahrsschr. f. wissenschaftl. Philos.,” 1881, Vol. pp. 265–295; D. Selver, *Der Entwicklungsgang der Leibniz'schen madenlehre bis 1695*, Leipzig, 1885; M. Zwerger, *Die lebendige Kraft d ihr Mass*, München, 1885; M. Planck, *Das Princip der Erhaltung Energie*, Leipzig, 1887, p. 6 *sq.*

PAGE 679, note 1. Add: and additions thereto, *infra*, p. 733.

PAGE 692, note 1. Add: Translated also by Duncan, *Philos. Wks. of ibnitz*, with the title “On the Ultimate Origin of Things.”

PAGE 705, line 10 from bottom (of text). The Latin text reads: ræterquam finiam, adjicere placet,” etc., of the first phrase of which I ve not been able to find any better rendering than that given in the text.

PAGE 712, note 1, at the end (p. 713). Add: *Cf.*, also, Foucher de reil, *Nouvelles Lettres et Opuscules inédits de Leibniz*, Paris, 1857, pp. 2–437, — *Note sur la loi de continuité*, by the editor. The passage refer- g to the letter here translated occurs p. 433. The note itself is a very mplete and valuable account of Leibnitz's principle. *Cf.*, also, Nour- son, *La Philosophie de Leibniz*, Paris, 1860, pp. 221–238.

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